CHEMICAL LIBRARY
APR 9 1917

JOURNAL
OF THE
AMERICAN PHARMACEUTICAL ASSOCIATION

Vol. V **APRIL, 1916** **No. 4**

PUBLISHED MONTHLY BY

AMERICAN PHARMACEUTICAL ASSOCIATION

Office of Publication: Bourse Building, Philadelphia, Pa.
Annual Subscription, $4.00; Single Numbers, 35 Cents

Entered as Second-class Matter January 28, 1916, at the Post Office at Philadelphia, under the Act of March 3, 1879.

NEXT ANNUAL CONVENTION, ATLANTIC CITY
SEPTEMBER, 5—9, 1916

The Fairchild Tablet
Of the Bacillus Bulgaricus

These Lactic Bacillary Tablets contain the true Bulgarian bacillus, type A, rigidly standardized, potency guaranteed for the time stamped upon the label, provided the package is kept in a cold, dry place.

The Fairchild Tablet is put up in boxes of fifty; five small vials of ten tablets each, and designed to sell at retail at 75c. per box. Trade price $6.00 per dozen boxes.

FAIRCHILD BROS. & FOSTER
NEW YORK

Fill the ℞ with MERCK'S

Specify
MILLIKEN
PHARMACEUTICALS

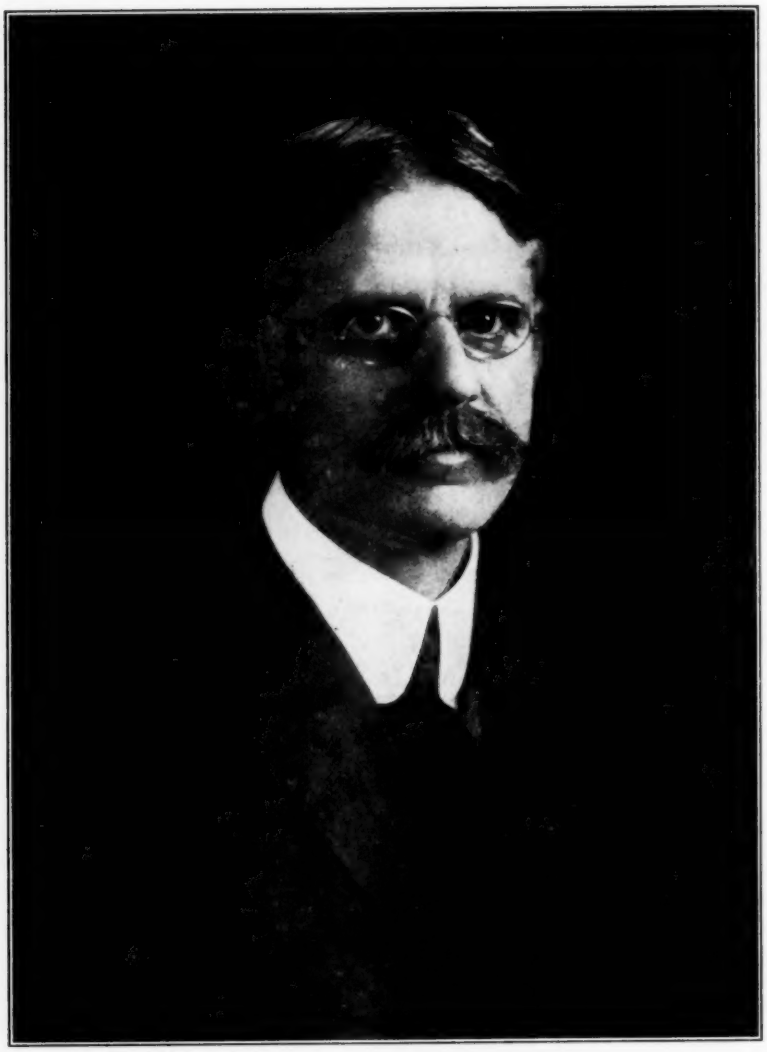
See Our Advertisement on Page vii
JOHN T. MILLIKEN & CO., ST. LOUIS

DRUG STORES (Snaps) for sale and positions in all states. Physicians, Veterinarians, Dentists furnished for locations.
F. V. KNIEST, R.P., Omaha, Neb. Est. 1904.

Table of Contents of this issue will be found on the last page (XIV).

HENRY VINCOME ARNY

President of the American Conference of Pharmaceutical Faculties,
1915-1916.



HENRY VINCOME ARNY

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

VOL. V APRIL, 1916 NO. 4

HENRY VINCOME ARNY.

H. V. Arny, President of the American Conference of Pharmaceutical Faculties, is known as a most active worker in pharmaceutical organizations and educational affairs. Born in Philadelphia, he became a resident of New Orleans at the age of three years, and when sixteen years old he began his apprenticeship with his brother-in-law, F. C. Godbold. After graduating from the Philadelphia College of Pharmacy with honors in 1889, he returned to New Orleans, and in 1892 left for Germany, where, after studying at Berlin and Göttingen, he received the degree of Doctor of Philosophy in 1896. In 1897 he was called to the chair of pharmacy in the Cleveland School of Pharmacy, and after a short time was appointed Dean of the institution.

From then on, his life has been so crowded with pharmaceutical activities that many wonder how one man can do so much for his chosen profession and still do it well.

In 1896–1897 we find him secretary of the Louisiana Pharmaceutical Association. In 1898–1899 he served as secretary of the Scientific Section of the American Pharmaceutical Association. From 1903 to 1911 he was secretary of the Northern Ohio Druggists' Association. From 1906 to 1911 he held membership in the Council of the Ohio State Pharmaceutical Association. In addition to the above activities, during these and later years, he found time to teach, to write "Principles of Pharmacy," to act as member of the Committee of Revision for the United States Pharmacopœia and of the National Formulary. His contributions to pharmaceutical and chemical literature are many and varied, and all help to show the wonderful activity and many-sidedness of the man.

In 1911 he was called to the chair of chemistry at the Columbia University College of Pharmacy and, if anything, has become more active than before in organization matters. The New York Branch of the American Pharmaceutical Association chose him as its chairman in 1912. Since 1913 he has been chairman of the Committee on Weights and Measures of that association, and in 1915 he was elected a member of the Council. From 1912 to 1914 he was the editor of the Druggists' Circular.

JEANNOT HOSTMANN.

EDITORIAL

E. G. EBERLE, Editor 253 Bourse Bldg., PHILADELPHIA

NECESSITY IS A GOOD TEACHER—"X" STANDS FOR EXPERIMENT.

WE should not worry over the shortage of many of the remedial agents when it is possible to find others equally or more efficient—there really are only comparatively few specifics among known therapeutic agents. Applying the thought generally, "necessity seeks bread where it is to be found," and "the art of our necessity is great that makes vile things precious." Europe is now learning much relative to the value of food-stuffs, and also the use of therapeutic agents, or perhaps learning of means that will do without many of them.

The manufacture of oleomargarine was prompted by Napoleon when he realized the need of a wholesome substitute that could be more easily preserved in edible condition than butter.

When turpentine rose in price we sought substitutes; when our potash supply was handicapped, American sources were discovered; the shortage of shellac a number of years ago provided a substitute from which the superior talking-machine records are now produced.

One of our citizens had gone to a European health resort to advise with an eminent specialist, who directed him to the waters of an American spring, only a few miles distant from where the patient had resided during the greater part of his life.

We ought to learn a new materia medica when our armamentarium is running short, even if we substitute or imitate—and this opens another chapter.

Imitation may not be essential for progress, but it does play an important part in industry and economy. The linotype imitated individual type; aniline dyes were spurious imitations of other colors; machine-work has largely substituted hand-work. So we might also go through our materia medica. More effective medicinal agents have been substituted for crude drugs and other compounds; and in many instances the substitute or the imitation has become the "genuine," or better, product.

Europe largely created our materia medica and much of that which we discovered has been developed there to such an extent that we have become dependent either for crude or refined material. The "dollar" idea has somewhat contributed to the conditions. We prefer to seek profits in exchanging manufactured goods for crude material, than to develop them, unless the manufacturing can be done on a large scale.

The inventive genius is native here. He is the wonder of the world. The thing desired is to do away with slow processes and manual labor. Rapid produc-

tion, quick exchange, characterize the trade of this country. We prefer to deal in large denominations. Prevailing conditions will not permit of slow methods, or handling of low-priced crude material, unless it can be exchanged quickly or converted into more expensive products that contribute a larger margin of profit.

We have bought the crudes for manufacturing and the native drugs of Europe because the wages paid in this country make competition in these lines impossible. Clinical laboratory experimentation is slow and therefore expensive, hence this work has largely been left to others. Conditions will not be decidedly different in this respect after peace is declared than before the war, but we should have learned some things it will be inexpedient to repeat, and also prepared for other plans of action.

The extent to which American manufacturers will engage in the production of synthetic chemical compounds remains to be seen; however, the pharmacists of the United States should no longer be compelled to pay higher prices than other countries for foreign medicinal agents, protected by U. S. patent rights. Foreign manufacturers should have no advantages over our own, and to this end our patent laws need revision. But beyond this, our materia medica deserves careful study. The number of remedial agents in itself is almost conclusive evidence that we are uncertain of their real merits. This speaks for coöperation between the schools and the industries so that more of the important drugs may be proven and standardized.

We are prone to look through different lenses at the accomplishments of other countries than sighted on our own. There is probably no country that would not gladly exchange their conditions for ours if that were possible. An analysis of the 1915 U. S. census returns, just issued, shows the money value of our manufacturers to be, in round numbers, $24,000,000,000, and that the United States leads the world in manufactured exports for 1915, the value of which is given at $1,784,000,000. However, we have greater opportunities that await development and while conditions may come about hereafter that will seriously hamper our industries in their trade with other countries, the time ought never to come again when these should not be prepared to supply every demand for home consumption. Our supply of medicinal agents should always be commensurate with the need for them. This is included in Preparedness.

When Alaska was purchased by the United States her resources were largely an unknown quantity. This may also be true with the Philippine Islands. Here may be a source of drug-producing and other useful plants. Unknown, or at least undetermined, resources of many states might be made available for the industries if such studies would be more closely associated with schools and receive more liberal encouragement from the people.

Even now we are well aware that nearly all raw materials entering into the manufacture of chemicals are found in this country, whereby the United States is placed in a very favorable position. When we take a survey of the world's resources, we are apprised that nearly all native products are found in this country, and those that are not serve as a medium of exchange for those we have to offer.

This phase of commerce is to be considered and constitutes a problem of every nation, namely, to find takers of products in exchange for money or goods that can be advantageously disposed of.

Exactly what the changes in the chemical and pharmaceutical industries will be after peace is declared, no one can tell; but what we term "normal," applied to conditions of trade, will undoubtedly have a somewhat different meaning than in the past.

Necessity *should* be a good teacher—X stands for experiment. E. G. E.

EDUCATION IS PREPARATION FOR ACTION.

THIS editorial was prompted by a news item, and editorial, and a hearing on the proposed New Jersey Pharmacy Law before the State Senate Committee on Public Health.

The news item had as headline, " 2000 Druggists Said to Be Substituting," and was followed by the statement that " Dr. ———, Director of Public Health and Charities, addressed the Business Men at ——— last night, and declared that *2000* druggists in the city were ' substituting ' in prescriptions."

" I recently made a test," said Doctor ———, " and of the first twelve prescriptions filled, all but three were substitutes. This permits my deduction that 2000 druggists in the city are substituting instead of filling prescriptions with the drugs called for."

The editorial is entitled " The Sale of Poisons," and follows:

The sensational poisoning case now attracting so much attention is a striking commentary on the ease with which the most deadly poisons can be obtained by any one who wishes to use them for any reason. By a happy accident the purchase of the poison was traced in this case. The accused went to a physician friend to learn where he might buy the arsenic that he wanted, but by so doing only added another clew for his detection, for he might have simply walked into any drug store and bought the poison without more than signing his name.

Quite needless to say, there is no compelling necessity on any one who wishes poison for any purpose to sign his own name and no safeguard against his disguising his handwriting. The druggist need not necessarily be acquainted with his customer nor need there be any identification of his signature.

If the paying out of money at a bank were as simple as this and as unguarded it is easy to understand how many abuses of the privilege accorded there would be. Surely human life deserves as much protection as money, and reasonable safeguards could be arranged by law so that at least the intending criminal would realize that he was leaving a very definite trail behind him.

Representatives of the grocery trade fought the New Jersey Pharmacy Bill and these were among the charges:

" That the bill would prohibit any grocer from selling remedies such as paregoric;

"That the bill was class legislation and was fostered solely by the pharmacy trade organization for the purpose of *confining the sale of drugs to drug stores;*

"That there *was no public demand* for such a bill and it was *an unnecessary imposition* upon the privilege of retail merchants to sell medicines and other proprietary remedies."

The headline in the paper of the report from which the brief extracts are taken read, "Merchants Put Up Stiff Fight Against Passage of Common Store Muzzler."

The comparison, for which purpose these items are quoted, is that in the first two the need of protection and the lack of it are emphasized, and the latter contends for an "open door" in the sale of medicines.

The subject of our editorial speaks for education; education of the public so that they may realize the need for the protecting influence of pharmacy laws; education of the pharmacists so that they will appreciate more thoroughly their own responsibility and that they are or should be their brothers' keeper.

The news item presents the story in a sensational way. Without a knowledge of the facts in the case, the twelve stores may have been selected because of expected results. Succeeding papers qualified the first statement by saying that it is estimated that *2 percent* of the druggists resort to substitution, and the further comment: "Some of the druggists are victims of drug peddlers who take advantage of the high price of drugs and get up fake packages to imitate the original."

The desire of this writing is also to direct attention to what is indicated by the hearing on the New Jersey Pharmacy Bill, that there is an effort to destroy the protection which is given the public in the sale of medicines and poisons, and to oppose protective measures which involve sale regulations of medicines.

We invite a careful reading and consideration of Dr. J. H. Beal's article in the March issue of this JOURNAL, entitled, "Desirable Legislation as an Aid to Maintain Pharmacy." We might easily make applicable quotations from this excellent contribution, but our message is spoken by *Education is Preparation for Action.* There will always be difficulty in securing legislation unless the public is educated to a realization of their need for it, and have confidence in the ability and integrity of those included in the proposed regulations; and then,—you cannot tell what a legislature will do, anyway. Legislators are largely influenced by what their constituents demand.

Pharmacists should not remain inactive when an attempt is made to permit the unregulated sale of medicines, especially when this force is sufficiently powerful to prevent the adoption of a useful protective measure, such as was contemplated by New Jersey pharmacists. Neither should they remain silent when unwarranted charges are made, nor when conditions are reported which it has been their persistent purpose to correct; ineffective, because the people and the press have withheld their support—why? Do they lack confidence in the pharmacist's ability and integrity? Look inward and outward.

Again, "A cause is hopeless when the spokesmen are not converts," and—prepare for action by means of education. E. G. E.

THE AMERICAN PHARMACEUTICAL ASSOCIATION AND ITS JOURNAL.*

I realize that it is a difficult task for anyone to attempt an address on association work for this company who are imbued with the spirit of coöperation, who have analyzed and studied the question as it relates to the American Pharmaceutical Association and are faithful members of this organization.

But this is my subject and in hastily preparing for a presentation of it, I hope that I may be able to bring out some salient points for making the American Pharmaceutical Association stronger, and, if possible, more influential for the good of pharmacy and of greater value to its members. In this attempt I am searching for illustrations, hoping that I may strike on at least one thought that is applicable.

The formation of associations is always prompted by the individual's realization of the power there is in combined or concentrated effort, systematically and thoughtfully applied. At the mint, one of the happy sallies of the guide is to inform the visitor that he can have a bar of gold if he will carry it away with him; but what would happen if the half dozen visitors would accept the invitation at one and the same time? The offer is made for individual, not united, effort.

An association reminds me of the complex carbon compounds. The atoms or groups of atoms differently arranged, though of the same kind and nearly so in quantity, give rise to compounds decidedly different, some bitter, some sweet, some odorless, some odorous, some harmless, some poisonous, but nearly all of them very similar in appearance. The difference comes from how the individual atoms harmonize, how the groups are linked together and work together. Some of these compounds differ again when brought in contact with other influences; let the sun shine on some of them and they change color, they can't stand the light—they leave the association.

Occasionally a disturbing element may be brought in, say N or accompanied by O, that quickly disarranges the combination, even making cotton, emblem of utility, a source of destruction: waste, discord.

I have seen the people on your busy streets, out of the window of perhaps the fortieth floor, and I can well imagine what the appearance would be still higher up. The little lively specks moving here and there, busy as the proverbial ant, seemingly without a definite purpose, but we know that every movement was prompted by a thought and the sum total of these charges influences perhaps in a more or less remote way every human being, every other kind of life, every activity in this world of ours.

Having these three illustrations, let me endeavor to apply them as best I can. First, that in relation to combined, harmonized, concentrated effort. The effective strength of coöperation is not so much in following the direction of a leader as in the hearty accord of all in the purpose—everyone must put himself into it. One of the difficulties of the drug business is that druggists are more or less at sea relative to its activities. They must make a living out of it whether the situation is altogether to their liking or not. And perhaps if other businesses or professions were analyzed there might also be some dissatisfaction among those who pursue them. Perfection may be striven for but is never reached,—therefore there is always encouragement for progress. There is constant talk of commercializing pharmacy, but there is no business or profession that is not followed for a liveli-

* An address by E. G. Eberle, before New York Branch, A. Ph. A., March 13. By vote of the Branch it was requested that the address be printed in the JOURNAL.

hood. So long as druggists think as much as they do about serving others more than how they serve themselves, it cannot be rightly said that they are dominated by commercialism. Surely the Association can expect better associates from among progressive business men than from among those that are unsuccessful.

Our Association realizes the existing conditions of the drug business and the work of the different Sections is systematically arranged so that all share in the benefits of the annual convention.

The success of an art or profession is reflected, not by selected individuals, but by the many engaged therein. We improve pharmacy by contact and conduct, by acts, not by words. We prepare ourselves for greater opportunities when we contribute advantages to others. We have profited by the lives of those who made our opportunities possible. Our further duty is plain—we should efficiently prepare others for the work we are assigning them to develop. Together, let us lift and carry away "the bar of gold."

Applying the second illustration, we should name our compound, not "666," but add another six. By the way, six is a good number; it represents the six working days of the week. At any rate, the four sixes placed next to each other should represent the number of our members, and would, if each one of us would only make up his or her mind to bring in a couple of new applications for membership. That should not be an impossible task when we have at least 45,000 druggists in the United States.

The atoms are the individual members; the compound represents the Association. The groups comprise the Branches, the Sections, the State Associations and all the related helpful organizations which should be brought in for perfect unity and effectiveness. The Association is the mass held together by the forces that activate the individuals and the groups. So then, to have the Association properly coördinated, these rings must be strongly linked or the compound would not be representative of the Association. But if the correct proportions obtain, if there is the proper activity and controlled mass action, then we have a body serviceable to all.

Inactivity may change the complexion of the Association; fortunately this is readily observed, just as the change of color in our chemical compound, and the suggestion is to correct the conditions. We all need to be stirred to action occasionally, especially when conclusions are reached that full duty has been performed by paying the annual dues, forgetting that the member's influence and coöperation are an important part in loyal membership. Occasionally, N and O get busy—constructive criticism is helpful when the critics recognize excellence as well as imperfection.

The last illustration—the moving, busy people viewed from a distance—may be applied to divergent views of members, apparently irrelevant topics for discussion and, with this fortunately, the preponderance of systematized useful work. All of this activity is essential to the life of the Association; a sleepy organization is an offence against the laws of good behavior. We may think there is little to show for all this continuous effort and tremendous amount of performance until we look back over the history of our Association and realize that nearly all the work for American pharmacy had at least its inception here. We must, of course, not seek satisfaction in what has been done, unless it brings enthusiasm for more and better work—*the more we achieve, the more there is before us to be done.*

An effective association represents the subordination of the individual to group control, the greatest good for the greatest number, and therefore leads to wider opportunity for all the members to rise above their former level. President-elect

Wulling, in his address as president of the American Conference of Pharmaceutical Faculties, speaking along this line, for coördination of associations, said in part:

Our national development has reached a point where isolation and independence may still be possible, but where they are unprofitable and foolish. Interdependence is a great privilege and advantage of which we of this higher civilization may be the beneficiary if we so choose. Interdependence brings strength, safety, and comfort, and pharmacy is the rightful inheritor of these, but it must claim them and must fit itself to enjoy them. No organization can accomplish singly all that it should, and therefore the sum total of the result of the work of all the separate or ununited organizations can never equal a hundred percentum. By their very nature all pharmaceutical organizations are related. If they would unite into a strong federation, each preserving its identity for its own local or particular purposes, but merging with each other heartily and unselfishly in some wise and consistent manner in all matters of common or national interest, all problems could be solved much more easily, quickly, efficiently, and wisely. Our local, state, and national governments might serve as a pattern.

I am sure that Doctor Wulling recognizes the difficulties that obtain in promoting such organization, but if the desire is sufficiently strong, if the motives of those entering into the promotion are sincere, it is not impossible. No effort ever persisted in for the length of time proportionate to the aim ever wholly failed. The words " propose " and " purpose " are linked by effort, or, perhaps better, it is energy that combines them into accomplishment.

There are new fields opening for pharmacists in this country, especially in industrial lines, and this means more work for the Association. The opportunities in this city are greater than anywhere else and therefore you are interested.

The reorganization of the medical corps of the United States Army is contemplated and we should see to it that pharmacists in the Government service are given proper recognition. We may be speaking selfishly, but, as a matter of fact, those who serve their country in these responsible positions should be prepared to render efficient service. The experiences of the Spanish-American War should not be repeated. Trained men are needed and they are entitled to a degree of official and professional standing.

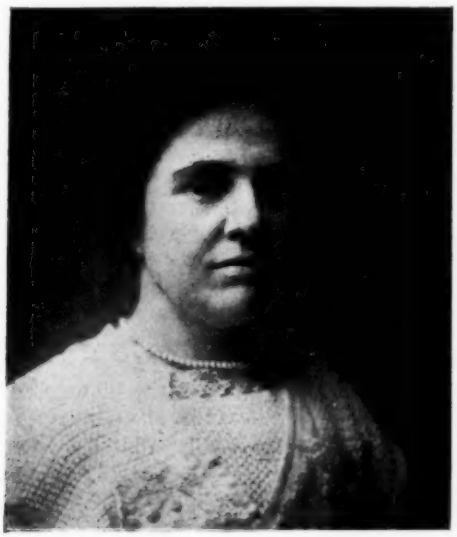
The Association is doing service for the pharmaceutical, chemical, and other related industries and will have a part in the promotions of these industries, stimulated by the changing conditions in Europe. The Association has always given more to its members and for pharmacy in general than the returns from membership fees warranted and while, fortunately, conditions have always developed which made this possible, endowments should be provided that will permit the Association to carry on its good work without handicap. Times have changed, schools and associations like ours in order to fulfil their duty to pharmacy must in part be aided by those whose needs they supply and whom they benefit. The graduates of schools of pharmacy should consider it a duty to hold up the standard of their respective Alma Maters and a privilege to contribute to their support in after-years. To that end, I am almost willing to say that graduates should nominally be assessed to pay an annual sum. We all pay to keep up educational and other institutions for the good of society, why not take a relative interest in our profession?

And now, last but not least, you will expect me to say something about the JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION. I am going to borrow an illustration used by the Philadelphia Branch of the American Chemical Society. Chemical and pharmaceutical investigations are being translated into

vigorous activity and, therefore, in keeping with one of the thoughts I have endeavored to present to-night, I will name the JOURNAL a catalyst, in the same sense that it reacts by contact. A catalyst first combines with one of the reaction components which reacts with other components of the compound. So the purpose of the JOURNAL is a helpful one, uniting and working for the members of the Association, Branches, Sections, the related bodies, and pharmacy in general. The JOURNAL is a means for promoting the work on the Pharmacopœia and National Formulary and now in preparing for the Recipe Book.

The JOURNAL, as the official organ of the Association, conveys the transactions of that body, and by every means that the publication may be aided the Association is helped. Everyone can assist in one way or another and your coöperation will be appreciated by the Editor, who, according to the best of his ability, is endeavoring to promote its success. Your encouragement, advice, and constructive criticism are always welcome.

MRS. GEORGE D. TIMMONS, VALPARAISO, IND.
President Women's Section, American Pharmaceutical Association, 1915–1916



MISS ANNA G. BAGLEY, COLUMBUS, OHIO
Secretary Women's Section, American Pharmaceutical Association, 1915–1916

WOMEN'S SECTION, AMERICAN PHARMACEUTICAL ASSOCIATION.*

PROCEEDINGS OF THE THIRD ANNUAL CONVENTION HELD IN SAN FRANCISCO, CALIFORNIA, AUGUST, 1915.

The first session was held at Tait's Café, San Francisco, Calif., Tuesday, August 10, at 2 o'clock P.M.

The meeting was called to order by the president, Mrs. John Culley, of Ogden, Utah.

Mrs. Richard Reese, of San Francisco, opened the program with several vocal selections.

Prayer was offered by the Rev. F. W. Clampett.

The address of welcome from the San Francisco hostesses was delivered by Mrs. H. L. Harris, who said:

In behalf of the San Francisco Ladies' Auxiliary of the California Pharmaceutical Association, I bring you greetings of welcome. We are delighted to have you with us to-day to participate in our pleasure, and hope that every hour spent in our midst will prove one of greatest pleasure to you all; and when the time arrives for your return home, be it in the far East, the North, or the South, may you carry home with you pleasant memories of your visit to California, San Francisco, and the many friends you have met here. Again I wish you a cordial welcome.

Mrs. H. M. Whelpley, of St. Louis, responded to these greetings as follows:

In the first place I wish to express my appreciation of the honor conferred in calling upon me to respond to this address of welcome. When I see your kind faces and realize the hearty welcome and the warmth and interest that I know is meant, I have scarcely fortitude enough to thank you for your words of greeting.

Your Golden Gate stands ever open, bidding the stranger to enter, with no St. Peter to demand a passport, and in addition you send your charming women to welcome us.

For the third time in the history of the American Pharmaceutical Association we are meeting in your state, the second in size in the Union; for the second time in San Francisco. To have the privilege of coming to this beautiful city, where there is so much to please us and so much to enjoy, would alone be sufficient, but to have added to this the warm welcome which we know is meant, and which we realize comes from the speaker's heart, makes the pleasure doubly great and all the more to be enjoyed.

San Francisco is at the edge of an empire of magnificent distances. When we consider the difficulties of communication between it and the older civilization of our country, we are not surprised that the San Franciscans are extremely proud of their work.

We who live on the other side of Nature's great barrier—the Rocky Mountains—have come in answer to your friendly call. When we are at home we think and speak of our friends in the North and our friends in the South, but when we join hands and come in one great common carrier, we come as one and feel that we folks in the East have come to visit you folks in the West.

* Papers read before the Section, excepting Reports and Addresses, will be printed in succeeding issues of the JOURNAL.

Although a great expanse divides us, we are still one people with the same aim and common thought, and 'tis this intercourse that keeps us one. For "East is east and west is west, and never the twain shall meet," does not apply to our country, the melting-pot of all nations, where we speak a common language and our motto is "Onward and Upward."

We are not here by accident, but because we have been planning for eleven months to come, to be with you and to become better acquainted. Know your neighbor and you will like him. "How endearing is the title of friend, what a charm in the very name of friendship!"

Webster's definition of a friend is "One who entertains for another such sentiments of esteem, respect, and affection that he seeks his society and welfare." That is why we are here: to be with you and to count you among our friends.

I wish to thank you again for opening to us your gate, your doors, and your hearts, and we promise to take advantage of the privileges extended, and, banishing all sorrow, think of the following lines:

> Don't worry your souls with trouble, and fret and fume all the day,
> But grasp them and, like air-bubbles, they vanish in mist away.
> Don't burden your heart with sorrow, and see but the darkness ahead,
> But hope for a brighter to-morrow, when the yesterdays all are dead.

Mrs. Fletcher Howard, president of the women's organization of the California State Pharmaceutical Association, brought the greetings from her organization:

I cannot begin to tell you how happy I am to-day. This is the second time that I have had the great privilege of being a factor in bringing this national men's organization to California: six years ago to Los Angeles, where I had the very great pleasure of welcoming the sisters and guests; to-day in San Francisco, the empire city, a city which, destroyed in a day, has almost rebuilt itself, and upon which the whole world looks to-day with wonder, surprise, and appreciation.

All changes, mental, moral, and physical, are preceded by a vision. In this case it was the vision of the Mission Fathers, of the Forty-niners, of those who came by the Horn, or with ox teams and prairie schooners, who saw the possibilities of this golden land, and laid the basis of what we to-day enjoy.

Sixty-three years have been the sessions of the American Pharmaceutical Association chain, and it is with the very greatest happiness that California for the third time welcomes this Association. We hope it will only be six years more before you will come back again to God's country by the golden sea.

In welcome of your coming we have planted poppies on the hillside, made rose hedges on the boulevards, and in Los Angeles you will find palm trees growing on the sidewalks, put there as a greeting for the people of the East, the West, the North, and the South who came to our expositions.

Show me a state which in one year can produce two expositions for the world's enjoyment. First the great San Francisco Panama Exposition, which is the crowning triumph and the celebration of the finishing of the Panama Canal. Then San Diego, that golden city by the sea, has without assistance produced an exposition which in beauty of arrangement is wonderful. I have not seen it myself, but am told that it is something once seen is never forgotten.

We are glad to be able to do so much to welcome you along the line of scenic beauty and education, both of which you will find at these, our two expositions.

Life is a quarry, and in its layers we find what we look for. Happy indeed are those who find in the layers of Life's quarry scenic beauties, friendship, and the memory of travels.

I feel that personally I have very much to be thankful for. This is the length of my American Pharmaceutical Association chain, and the last one is to be added. No amount of money would take from me the memories, the happiness of the enjoyment of the friends I have met in the remote past, and those who from year

to year come to these exposition gatherings when we have expositions and the yearly gatherings of the American Pharmaceutical Association.

Again I repeat, I hope to welcome you back in five or six years to God's country.

Dr. W. C. Alpers, of Cleveland, Ohio, president-elect of the American Pharmaceutical Association, greeted the members of the Women's Section on behalf of the parent organization:

If I should point to any particular moment of this agreeable stay in San Francisco as the most enjoyable, the pleasantest of all, I would say this is the hour, when I have the privilege of addressing you and extending the hearty greetings and good wishes of the American Pharmaceutical Association.

Since my membership in the Association, which this year is twenty-five years old, the idea of forming a Women's Section has been talked about a great many times. I even remember almost twenty-two years ago—probably there are some ladies—no, there are none here that are as old as that—the subject of forming a Women's Section was already talked about in quiet corners, but it was hushed over. However, the desire was there, and the desire grew and grew, and, instead of saying that it *might* be done, it gradually was said it *ought* to be done, and from saying it ought to be done it was said it *shall* be done, and now it is done.

I believe it was one of the happiest thoughts of some members of this Association to form this section. I believe there is no other influence, no other one element of influence that is so powerful, so strong to make our meetings a success as the presence of the ladies. It is well known that the influence of women over men is much stronger than appears on the surface. It is acknowledged all over the world, and I do not speak here of the man who in speaking to one of his friends said, "Look at me. All that I am I owe to my wife." And his friend said, "Well, we won't blame her for it."

I do not mean that kind of influence. I mean that quiet, patient influence for the good that women exercise over men. But if there is any class of men that need this influence and that are more susceptible to it than others, that class is the druggists, and there is a good reason for it.

I do not know if statistics have ever been taken as to how many druggists are successful and how many are not, and why they are successful, but I know if we could bring all the successful druggists in the United States together and ask them why they are successful, ninety percent of them would answer, "I am successful because I have a good wife."

No man in this world needs the influence of a good wife so much as a druggist. It lies in the nature of his business. He is confined more than any other man. He cannot go out at liberty as other people can. He cannot enjoy his evenings as other men can. He has to work when other men go to entertainments, to amusements, to see their friends, and he would break down under that continuous little care—it is not a big care at one time—but it is the continuous bearing down of the little things that work on the druggist's mind. He could not stand it if it was not for the beneficial influence of a good wife, of a happy family, and I know what I talk about. I have been one of them, and I have friends who have unbosomed their hearts to me, and I know that there are many, many druggists' wives who are the best assistants, the only good assistants of the husbands that they have.

After the day's toil and care, after they have done all the work they ought to do, their wives come down quietly back of the prescription counter and help in a patient, loving way, filling powders, rolling pills, and doing different things to help. If the druggist goes out to a troublesome customer, or to an annoying man or woman who makes demands that are out of place, and he meets them with a smile, a few kind words, and smooths things over, it is not his doings; it is the doing of that good woman behind the prescription counter, and her love, her patience, her devotion resound and re-echo from his heart and go over to the customer.

Those are the successful men, those are the successful druggists, and I have always said, and say to-day, that when the druggists come to these meetings and enjoy themselves, they should bring their wives, and any member of our Association who is loyal to the interests of the Association will bring his wife along. He ought to. She is entitled to a vacation as much as he is. She is as entitled to see something of the world as he is.

It helps in our deliberations, it helps in the whole atmosphere around us, to have the women present, and the larger your section will grow and the more influence you will gain, the more it will tend to the benefit of the Association, and these words are particularly true in the state in which we are now.

I was over in Berkeley the other day, visiting a married daughter there, and in the course of conversation she quietly remarked: "Yes, we voted for such a man." That word struck me; it went right to my heart. She did not say "I voted," she did not say "My husband voted," but "We voted." Of course, they voted together, as all men and women do when they are husband and wife, but that "We voted" brought home to me the fact that women vote in this state. I had never thought of that question a great deal. I had, of course, read about the suffrage movement as well as any other man, but I never paid much attention to it. I am firmly convinced that women have as much right to vote as men. Why shouldn't they? They are fully as intelligent; but I never thought much about the question until this little remark brought it home to me.

It is different with us. Men of education, men of refinement do not wish to vote in the eastern states because they meet people there they do not like, that they do not care to associate with, and, rather than do their duty, their repugnance against association with these people keeps them away from the polls.

Here, I see, they have the voting place in the high school, not in the saloon, as in the eastern states. So it is all around, and that whole question appealed to me at once in an entirely different light, and I believe right now I am a suffragist. (Applause.) There is no question about it at all, I can see the beneficial influence, and I believe this influence of the women shows not only, as I said before, in the Association: it shows in the state.

I know the time when people spoke of San Francisco as a place of gamblers, of frauds, of robbers, of murderers. That was in the beginning, when only men came here, when the city was founded, when the first rush for gold, the greed for wealth, brought them here. Now all this has changed. This man brought his mother, the other brought his daughter, and at once the influence of the women was shown. Instead of a place that everybody disliked and loathed, we now have a beautiful city here—not only a beautiful city, but a beautiful state, beautiful beyond all description. I heard so much of California before I came here, my daughter wrote me so much and I read about it, but it is all unequal to the reality, for what I have seen surpasses everything I ever expected to see.

In these words I do not exaggerate. It is the beauty of the country, the beauty of the flowers, the frankness of the men and the women, the size and elegance of your buildings, and, above all, the grandeur of Nature all around, that impresses a man who has any sense, any gift of observation, and it impressed me, and I could not help thinking what an influence California must have had on the men that came here as the first pioneers—rough, coarse men—and this influence has continued in the same way till to-day.

This year hundreds of associations come here, all kinds of associations—scientific, industrial, economic, whatever object they have in view—they come here for their deliberations. Of course, they have, each of them, a specific purpose in view, but they do more than that. Each one helps the other; each one helps the state, each one helps the country, each one helps the world, for every one of these associations, no matter what their ultimate object is, is trying to do something good in some way in their sphere as they see it, and each time the men and women of these associations pick up, you might say, a little brick, and add it and build up their big

temple of enlightenment and civilization and happiness, and so you will help in this work. Be it ever so little that you will contribute to this temple of happiness, I know you will do it, and our Association will do it, and then right from this state we may go over this country and we may go to other countries.

Think what a remarkable difference there is just this year between our beautiful, beloved country and the countries beyond the sea. We are engaged, like these hundreds of other associations, in peaceful work, in work of enlightenment, work of happiness, and over there men and women kill and slaughter each other It is a terrible thought to have, and it is again the women to whom mankind must turn to remedy this thing. It is women who can recognize and can see better than any one else the power and necessities of a peaceful, good home; and if international peace is ever brought about, it will be accomplished by the wishes, by the deeds, and by the actions of the women of all countries.

Do not deceive yourselves with this beautiful patriotism and devotion to your own country. We see a young man go out to war. We are proud of him, his sister is proud of him. Look at him; his face flushes with courage, with enthusiasm, with inspiration for his country. He wants to be a hero, and we admire him. We cannot help but admire him, and so he goes out. But they do the same in other countries, and the whole trouble is that our thoughts have stopped there. We think only of the beauty of heroism. We do not think this same man whom we admire goes out to kill, that he goes out to slaughter other men who also have mothers, also have sisters, also have their admirers. But a change will come as soon as we realize our mistake in worshipping war, men of war, generals and soldiers, and so we should do all we can to abolish this feeling and to substitute for it a feeling of brotherly love—international brotherly love.

But I have, perhaps, gone too far on this matter. There are so many beautiful things to see in California, there are so many points of interest, so many thoughts that carry us forward involuntarily, that a man does not know where to stop, but I must stop. I will not detain you any longer in your deliberations.

I can only repeat that I bring you the heartiest greetings of the mother Association, the American Pharmaceutical Association. I know that your deliberations will be guided wisely and conducted with great care and thoughtfulness, and I know whatever you do, whatever you decide, you will do it to further the purposes of the American Pharmaceutical Association and pharmacy in general.

The President: I wish to announce as members of the Resolutions Committee, Mrs. Godding, of Boston; Mrs. Pease, of Nebraska; Mrs. Snow, of Chicago; Mrs. Beal, of Illinois, and Mrs. Alpers, of Cleveland.

Mrs. Whelpley, second vice-president, occupied the chair while the President read her address.

PRESIDENT'S MESSAGE.

Madam Chairman and Ladies:

It gives me pleasure to greet you at this, The Third Annual Meeting of the Women's Section of the American Pharmaceutical Association.

I deem it a privilege to visit the city of the Golden Gate, with its beautiful harbor, and at this time the Panama-Pacific Exposition, a monument to the courage of a great state. From past experience, I assure you that if you partake of the genuine good spirit of these California people it will indeed be a joyous time for every one. The proverbial hospitality of the South is no more pronounced than in this state of the Golden West.

We have gathered from far and near to discuss the problems and experiences of women interested in pharmacy. No field seems to offer greater opportunity right now than this one. Particularly in the cities in the demand for women as pharmacists, as clerks, in the hospitals and as managers of stores, we are finding our way. As wives of pharmacists, our responsibilities are not lessened, because the good American wife shares her husband's in-

terests to the extent that an intelligent companionship helps solve many serious problems. A mere discussion of business ideals with a sympathetic wife cannot but help the tired business man over some hard places.

The object of this Section, as defined by our Constitution, is to emphasize the right and capability of women to engage in all pharmaceutical pursuits, to unite the women members of the American Pharmaceutical Association and the women of the families of the American Pharmaceutical Association, and to coöperate in the promotion of the general progress of pharmacy. In a plan so far reaching there will always be new fields to conquer.

We hope these sessions will bring forth many interesting things that will help us in our life-work, whether as pharmacists or the wives of pharmacists.

For the serious consideration of the Section, I would recommend that as women we become interested in pharmacy as taught in our schools, to know if the home instruction will help the boys and girls begin aright; also the university courses. Shorter hours should be of supreme importance to women—first, because the excessive number of hours our boys must work is sapping their vitality and injuring their health, sometimes permanently. Is it not a mother's concern? And then as wives we spend too much of our lives alone: few other professions demand such sacrifices. Let us hope for a time when the home of a pharmacist may have as much time for companionship as any profession.

To the membership committee I would suggest that a campaign be carried on in districts, each member of the committee have a certain number of states to look after, and thereby become acquainted, during the year, with all the women who should become members of the Section. Also they might interest some pharmacists in becoming members of the American Pharmaceutical Association.

For the benefit of incoming officers, some definite plan of work might be formulated, during the year, so that as the Section passes into new hands there will be no time lost in correspondence, but the work begin with the year.

I am deeply conscious of the honor bestowed upon me by this Section in making me your president, and I wish to express my sincere appreciation to those who imposed their confidence in me.

If I have failed to further the work, I assure you it has not been for want of sincere desire, but rather because of my short experience and acquaintance in the Section.

I especially wish to thank our faithful Secretary for her untiring efforts, also the Executive Committee for the splendid program it has provided for this meeting, the chairmen and members of all committees, who have shown a sincere interest in the work.

As I retire from the chair I hope to become an active member of the Women's Section, that I may continue the acquaintance of the women who made it a reality and thereby continue in the forward movement of the American Pharmaceutical Association.

ELIZABETH H. CULLEY, *President.*

The President's address was accepted and referred.

The President: We will now listen to the Secretary's report.

REPORT OF THE SECRETARY OF THE WOMEN'S SECTION.

Your Secretary regrets to submit practically no report for the past year beyond such correspondence as was necessary. Circumstances which could not be controlled prevented the accomplishment of plans outlined immediately following the Detroit convention.

However, as your Secretary has been continually in touch with the work since the organization of the Section in 1912, she trusts she will be pardoned the liberty of making a few suggestions and plans for the future which involve the work of other offices and committees not concerned in the Secretary's duties.

In the course of the work we find that members appointed to committees would be willing to work if they had the remotest idea of what was expected of them. In the past none of us have had any very clear-cut ideas as to what work should be undertaken by committees, and I believe the wise thing to do at this time is to discuss plans for the next year's work, and the suggestions which follow are merely suggestions for discussion.

The Women's Section has served its probationary period and must now show actual results.

While the work of the past year does not show up well on paper, nor is it in any way up to the expectation of the officers, I think we need not feel discouraged. There must be a time for growth, and I believe that we are making a constant internal growth; in fact, there are many evidences of it.

One of the difficulties encountered in our work was that too few women had identified themselves with the Section who could be assigned to duty, making the work of each committee of too broad a scope and too heavy for its members. Since our success depends on interesting a large number of women, the enlargement of committees would increase the number interested, broaden our territory, and divide the burden of committee work. Most of our women are so situated that this arrangement would appeal to them, but the parcelling out of a large amount of work and supervising of it is quite a task, and I believe each committee should have a chairman who should supervise only.

The Constitution sufficiently defines the duties of the officers, except perhaps the Treasurer and the Historian. So far our Treasurer has had absolutely nothing to "treasure," but it is to be hoped that the present meeting will devise some means for raising funds, and a few ideas are submitted under another head.

The work of a Historian in such an organization as this almost demands the help of a committee, and your Secretary suggests that it be understood that the Historian is to have a committee for a year or two, either appointed by the President or of her own selection. Anything the Historian might accomplish now perhaps would not be of much value in promoting our work, but in the years to come it will be an interesting study and of great comfort to us to know just what has preceded our efforts to elevate the status of women in pharmacy and the ups and downs encountered after our organization was formed. Also, these things would add to our prestige if we ever accomplish the room at the proposed American Pharmaceutical Association headquarters. We were told by American Pharmaceutical Association speakers at our initial meeting not to overlook the history of women, and the past will reveal some heroic efforts on the part of non-professional women who have, unaided, reared a family and a successful business on the ruin of a retail drug store. Your Secretary is preserving a number of papers and records to be turned over to the Historian, and also the photographs of the women members. The American Pharmaceutical Association has a photograph album of all its famous men in pharmacy, and we should make a like record.

Membership Committee.—This is the most important of our Section committees, for it is the link connecting us with the American Pharmaceutical Association. Last year we made the mistake of electing five members to this committee, while the Constitution provides for four elective members. Experience has shown—and I believe all workers on this committee will agree—that the committee is too small to properly cover the whole of the United States. I also believe that this should be an appointive committee rather than elective, so that more deliberation may be given to the selection of its members and also to secure the consent of its members to use their names on this committee. Otherwise we are handicapped because the members are not able to give any time to the work. I would therefore propose the following amendment to the Constitution:

Section 4, Article I, paragraph 4: "The Membership Committee shall consist of eleven members of the Section, composed of a supervisory chairman and ten active workers, who shall be appointed by the President."

The thought also comes that this committee might better serve its purpose if the retiring President made the appointment, since she would be more in touch with the members than the incoming officer.

As to plans for the committee, I would suggest dividing the country into ten divisions, giving each working member five states as her territory. With the assistance of the supervisory chairman, the records in the Secretary's office, and the work already done, this would not be an unwieldy territory for any one person. We need not confine our efforts to women pharmacists alone.

Divisions.

I.	II.	III.	IV.
Maine,	Connecticut,	Maryland,	South Carolina,
New Hampshire,	Rhode Island,	Virginia,	Tennessee,
Vermont,	Pennsylvania,	West Virginia,	Georgia,
Massachusetts,	New Jersey,	District of Columbia,	Alabama,
New York.	Delaware.	North Carolina.	Florida.

V.	VI.*	VII.	VIII.
Mississippi,	Kentucky,	Illinois,	Kansas,
Louisiana,	Ohio,	Wisconsin,	Nebraska,
Arkansas,	Indiana,	Missouri,	South Dakota,
Texas,	Michigan.	Iowa,	North Dakota,
New Mexico.		Minnesota.	Oklahoma.

IX.	X.
Colorado,	Arizona,
Wyoming,	Nevada,
Montana,	California,
Idaho,	Oregon,
Utah.	Washington.

* Omitting Indian Territory leaves one division short, which was placed in a thickly-populated district.

The literature used by the committee should be prepared by the chairman in coöperation with the chairman of the General Membership Committee of the American Pharmaceutical Association, in order that all circular matter may be uniform, and special letters referring to our Section should be submitted to him for approval.

It may be surprising to some of our members to learn that we have in our files between 500 and 600 names of women pharmacists only a small proportion of whom are members of the American Pharmaceutical Association. In addition, the membership of the American Pharmaceutical Association must represent at least 2000 women who are eligible to membership in our Section. It is evident that we have plenty of material to work on.

Mrs. Fennell, of Cincinnati, reports the names of all the wives of the local A. Ph. A. Branch members there, all of whom wish to be enrolled in the Section. This is an idea for all of us to work up.

Press Committee.—In this committee we have a powerful agent for spreading the American Pharmaceutical Association gospel, and with the material at hand we should keep up a breezy news regarding American Pharmaceutical Association affairs throughout the twelve months in the year in every possible publication.

Some time ago your Secretary, in studying over this press work, made a crude outline which may serve now as a nucleus on which to build the plan for next year's work. Under each locality is found the material to work on and the publicity medium for using it. The same division of territory might be used as suggested for the Membership Committee, and here I would also suggest a large committee. The popular magazines and the Sunday papers are suggested because of an idea given in a paper read before the Section last year that we should write fiction portraying the pharmacist as he is—a public benefactor—rather than the untruthful and grotesque pictures drawn of him by the average fiction-writer. As an example, the ridiculous article in Pearson's last winter and a more recent article in the Saturday Evening Post on the subject of chain stores are cited. Some of our women who are gifted in a literary way could easily write as good fiction as the magazines publish today; interesting articles illustrated with a kodak picture will be accepted by almost any of the magazines; allied trade papers will also accept such matter; our drug journals will publish similar matter and are glad to have news of the work we are undertaking, and the A. Ph. A. JOURNAL, I am sure, will give us all the space we want. Each member, whether a committee member or not, should use every opportunity to get items in their local papers, their club papers, etc., for all publicity, even though it may seem irrelevant, will have its good effect.

Plan for Publicity Work of the Women's Section.

Local and county.	State.	National.
Local retail druggists	Women's Auxiliary	National pharmaceutical organizations
Local drug associations	Travellers' Auxiliary	Faculties
Colleges	Wholesale druggists	Boards
A. Ph. A. Branches	Colleges	Hospitals
Hospitals		Government service
Wholesalers		
Travellers		
County branch of state association		
MEDIUM.	MEDIUM.	MEDIUM.
Daily, weekly, and Sunday newspapers, especially Women's Department	Official organ of state association	Popular magazines
Federated Club Bulletin	Travellers' Bulletin	Sunday magazine section of newspapers
Meetings of all pharmaceutical organizations	Wholesaler's house organ	Drug journals
	College paper	Allied trade papers
	Drug journal	JOURNAL OF THE A. PH. A.
	Allied trade journals	

District chairman to supervise all activities, local, state, and national.

Special work in convention city to work up next convention, supply pictures, articles, etc., to district chairmen.

Seek work in connection with local women's clubs on welfare work.

Medical school inspection, sanitation, etc.

Outlook Committee.—What do we want to do next year?

We should keep in mind such objects as: Aid to women pharmacists. Aid to the retailer through improved store conditions, such as hours, trade customs, cut rates, etc. Encourage women students in pharmacy. Investigate education of women students wishing to take up the study of pharmacy. Real success cannot come without the proper preliminary training, and we should not encourage them to make this mistake. Coöperation with women's clubs. Should we aim for ultimate affiliation with the National Federation of Women's Clubs?

The Secretary has sent out a *Questionnaire* to women now engaged in pharmacy which should bring much information which would be valuable material for this committee.

No doubt the chairman of the Outlook Committee will have some valuable suggestions for the coming year, but whatever we undertake, the committee will be handicapped without funds, and it is hoped that some plans will be made for securing the necessary funds. A letter was sent to some few of the officers for approval from the Secretary's office, but was not sent out generally to the membership because it was thought best to wait the discussion at the meeting. This letter was as follows, but should be changed in the fourth paragraph to meet a year's work instead of a few weeks preceding the annual meeting, for which the letter was prepared.

A PLAN TO RAISE FUNDS FOR THE WOMEN'S SECTION.

Our Constitution, among other objects, names these two: "To unite the women employed in pharmaceutical pursuits for mutual encouragement and assistance," and "to coöperate in the promotion of the general progress of pharmacy and the American Pharmaceutical Association."

The Women's Section is now sufficiently well established to take up a definite line of work and show results. The two objects quoted above have been selected because they seem more important now and something may be accomplished along these lines in the immediate future.

Ever since the Section was established the question of funds has been discussed to some extent, but no definite action has been taken. The reason for this has probably been due to the fact that a young organization of national scope finds it very hard to raise funds except by assessment of the whole membership, and this is hardly possible in the Women's Section for various reasons.

The American Pharmaceutical Association allows a commission of $1 each on new memberships secured by local branches, and our Section has this same privilege. If we would secure 50 new members between now and the August convention, we would have a fund of $50 toward carrying out the first object mentioned above, while at the same time carrying out the second.

The three following objects for the work of our Section have been suggested to your Secretary: (1) The establishment of a scholarship for women pharmacists in some college; (2) the equipment of a room in the proposed A. Ph. A. building; (3) awarding of prize A. Ph. A. memberships to women graduates in pharmacy for proficiency in some branch.

These objects are all worthy our efforts, but the first two seem out of the question just now; we could not raise a sufficient sum of money to endow a scholarship in less than a number of years, and the A. Ph. A. building is as yet only a project. We can, however, out of a sum of $50 to be earned as mentioned above, award ten prize memberships to women graduates. This would also be turning the fund back again to the Association.

If this plan is adopted, all applications secured should be sent direct to the Secretary or some other officer for record before being turned over to the Association. Please let us have other suggestions at once. In the meantime the Membership Committee will claim the $1 on all applications secured.

Will you not agree to get one or two members for the American Pharmaceutical Association at once to help out the Section work?

Kindly advise the Secretary at once of your approval or disapproval of the above suggestion, as we should have a majority favorable to the plan before going ahead.

The following information is desired by the Women's Section of the American Pharmaceutical Association to complete its records of the women pharmacists of the United States and to enable it to work toward better conditions for women pharmacists.

Will you not kindly coöperate with us to the extent of filling out the blank below and returning to the Secretary?

Name .....
Business address .....
Home address .....
College Degree .....From what college .....
If no degree, what college training .....
What preliminary education .....
Registered .....Registered Assistant .....
What experience in drug store .....
Labor laws of your state. Do they interfere with your securing employment on the same basis as men pharmacists?
How do salaries in your section compare with those paid to men for the same work?
To what do you attribute the difference?
Do you meet with any difficulties in your work that a man would not encounter?
Hospital pharmacy. Does your state law require that hospitals employ registered pharmacists? To what extent is the law enforced?
How can the Women's Section be of service to you in changing working conditions?
Remarks .....Please make suggestions freely.

In correspondence with the A. Ph. A. officers we are cautioned that if we adopt the plan of asking for this $1 on each membership we must be careful not to conflict with the local branches.

Hospital Committee.—The work of this committee is more or less technical, and I would suggest that the present committee be retained another year. They have been quite active, considering the short time they have had to work, and have made up a framework on which they could perhaps build more successfully than a new committee, which would have to start all over again. Also, the committee is rather well distributed as to territory.

The President may see fit to appoint still further committees to supplement the work

of our present ones, and your Secretary would favor any committees which would increase the number of women in actual contact with the Section.

Another matter to be brought to your attention is the evident misunderstanding by many of the relation between our Section and state associations or their women's auxiliaries. We must not forget that we cannot accept the services of women who do not have an A. Ph. A. member in the family, but wherever we find women willing to coöperate with us we should attach them to us by securing the needed membership to make their assistance legal.

I would suggest that all the members present at the meeting be asked to sign a pledge to devote some little time and thought to the work of the Section during the next year, and some means might be devised to find out each woman's special fitness for certain work. I have met so many women who tell me that they are so thoroughly domestic that they could not do anything to help us, and yet they show by this very statement that they would help if they had some specific task assigned them, but the committees are not personally acquainted with them and do not know where they would fit in best.

I am more pleased than I can express at the earnestness growing up among our workers. It is encouraging to those of us who have had to bear the trials of organization, and it speaks more than any other one thing for the ultimate success of the Section.

Finally your Secretary regrets that she will not be present at the meeting, but will be with you in spirit, wishing you a pleasant and profitable meeting.

ANNA G. BAGLEY, *Secretary.*

The President: Will you accept the reports of committees as a whole, or will you discuss and accept them one at a time? What is the pleasure of the assembly?

Mrs. Whelpley: I move we adopt them as a whole.

The President: It is moved we adopt them as a whole.

(The motion was put and carried.)

The President: I will now call for the Report of the Executive Committee.

REPORT OF THE EXECUTIVE COMMITTEE.

The Executive Committee has little to report—not because nothing has been done, but because the work is not of a nature that lends itself to much comment. No special business has been brought to our attention, and the work has been confined almost entirely to planning this program.

I wish to express my appreciation to all who have in any way assisted, particularly to the officers of the Section and those having a part in the program. But for them this committee would have little to show for its labor. I have only commendation for those who have some other part in the program. The fact that you have done so indicates your interest. Those who are here in attendance at this meeting, by that very fact are giving ample proof of their interest. If what I am about to say seems unduly severe, be assured it does not apply to either of these classes. If I make any criticism, I should like it to be constructive, not destructive.

It is evident to me that there must be more interest if this Section is to realize in any large measure the hopes and ideals of its originators. In the one matter of obtaining papers for the program, the indifference shown was surprising. Requests were rarely refused, but often ignored, and we all know open opposition is easier to contend with than indifference. It is impossible to say where the fault lies, but it may be the personnel of your Executive Committee. If so, I am sure the members would gladly retire. Do not the women of the American Pharmaceutical Association want this Section? There can be no doubt that wives of druggists are deeply interested in the profession. This Section was provided for them, and it is hard to believe that they do not want it. Is it the form of the organization? That seemed to be settled last year to the satisfaction of all. Is it the presence of the women druggists? They have been pleased to coöperate, but they may participate in the work of the other sections, while the non-professional women are limited to this. This is preëminently their section. Whatever the reason, the condition exists, and something must be done to remedy it. The members of the Executive Committee would welcome any information as to the cause or suggestions as to possible treatment.

Respectfully submitted,

ZADA M. COOPER.

The President then called for a paper by Mrs. Timmons, of Valparaiso, Ind., on "The Pharmacist and Public Health." The reading of this paper was followed by the committee reports, which were read in the order named: Hospital Committee, Miss Bertha Ott, chairman; Outlook Committee, Mrs. E. A. Ruddiman, chairman; Press Committee, Mrs. Timmons, chairman; Membership Committee, Mrs. Gray, chairman.

REPORT OF COMMITTEE ON HOSPITALS.

This committee wishes to express its appreciation for the honor and privilege granted women pharmacists active in hospitals to become a factor in the Women's Section, and, through same, established in the great and eminent American Pharmaceutical Association.

This committee having been but recently appointed, we wish to state a few objects in our plans, to be carried out when time and circumstances will permit.

1. To encourage every woman pharmacist engaged in institutional pharmacy to become a member of the Women's Section of the American Pharmaceutical Association; also take active part in the work of the branches of this Association in their respective cities.

2. With the aid of these members, give our hearty support to that part mentioned in our Constitution under Section I and Article 2, which is to labor for the improvement of legislation regulating the registration as pharmacists of women employed in the practice of pharmacy in hospitals and similar institutions.

3. To work out a satisfactory system by which the hospital pharmacist can keep a record of narcotic drugs.

4. Method of fumigation that will be most effective. Stock mixtures—what medicines should be allowed in the ward drug closets. General economy in manufacturing and convincing the hospital management that to do the manufacturing is economical, even though it necessitates a bit of apparatus.

5. Later this committee may be able to support an employment bureau, aiding those pharmacists who wish to exchange positions in institutions, or pharmacy graduates who wish to enter same.

We are happy to know that Providence put this motive of consideration for their sister pharmacists in institutional pharmacy into the hearts and minds of the women who organized the Women's Section of the American Pharmaceutical Association. This organization being a national body offers us great opportunities, which no other organization can give, and many an isolated worker in this great field of hospital pharmacy will gladly take hold of this privilege and help raise its standard to the best in the land.

BERTHA OTT.

REPORT OF THE OUTLOOK COMMITTEE.

When appointed chairman of the Outlook Committee, I had not a very clear idea of the duties of the committee, but found we were to suggest new lines of work for the Section in order to make it more efficient. Following out this idea, I wrote to the different members of the committee and asked for suggestions. Some have responded.

One suggestion is that the Women's Section emphasize and encourage the use of American-made goods. This is right in line with the trend of business thought of the whole country at present.

Another line of work would be to take up the subject of shorter hours for druggists, with the purpose of educating the public to demand a decrease in the number of hours of work daily and partial closing on Sunday. To accomplish this a central committee of the Women's Section should be appointed whose duty it shall be to prepare articles on this subject for publication in the trade journals, magazines, and daily papers throughout the country. This committee could use material from any source and should coöperate with the Women's Sections of the state associations and the other national organizations. The articles thus prepared should be sent to the different sections of the country for dissemination by the local members.

Included in this report are the recommendations of Mrs. Hampton Ray Kenaston, a member of the committee, which are enclosed.

I hope that these suggestions may be of some use to the Section and that you will have a very successful meeting.

MRS. E. A. RUDDIMAN, Chairman.

Mrs. H. R. Kenaston: To be appointed as one of the members of the Outlook Committee of this distinguished body is a rare privilege, and I wish to assure the ladies who requested this service from me that I regard this appointment as an honor that any one should be proud to accept.

As a result of careful consideration, I wish to offer the following for your consideration, with the full assurance that only that which is for the greatest benefit will become effective as a portion of the deliberations of the session:

Recommendations.

1. The *Committee on Botany and Medicinal Plants* shall be appointed by the President of the Women's Section, American Pharmaceutical Association, as follows: One member to be appointed for five years, one for four, three, two, and one year respectively, each vacancy occurring by expiration of term to be filled by a new appointment for five years. The committee shall elect its own chairman annually. It shall prepare a compilation of current topics in botany, with special reference to medicinal and economic botany as pertains to their connection with the conduct of the profession of pharmacy.

2. The President of the Women's Section, American Pharmaceutical Association, shall appoint annually a *Committee on Educational Work*, consisting of one member from each state represented in the Women's Section, American Pharmaceutical Association, whose duty it shall be to interest the student body of the high schools, universities, and other institutions of learning that include young women, to engage in the study of pharmacy, and endeavor to present to the young women the comparative advantages of engaging in the profession of pharmacy at the period of their lives when they would be deciding upon their life-work.

REPORT OF PRESS COMMITTEE.

The following report of the Press Committee is respectfully submitted. Each member of the committee was asked to send an article outlining the purpose and work of the Women's Section of the American Pharmaceutical Association, to the drug journal nearest her. These were to appear in the July issue. The chairman, being nearest to Chicago, took it upon herself to get a notice in the Western Druggist of that city.

An announcement of our Section was made at the Indiana State Pharmaceutical Association, and an invitation extended urging the women to attend our sessions at San Francisco.

A splendid article by our Secretary appeared in the April number of the Era; also notices in the A. Ph. A. JOURNAL sent in by the same worker.

CECELIA TIMMONS, Chairman.

REPORT OF MEMBERSHIP COMMITTEE.

The members of my committee were duly notified of their appointment and assistance offered to help them in any way that could be done.

One member of the committee responded, assuring me of her active interest in the work and adopting the plan of sending to each druggist in the Twin Cities of Illinois a personal letter with the "Why" circular enclosed along with a membership blank, and then, a little later, of calling upon each druggist in person and asking him to join the Association.

From District No. 5, comprising the states of Kansas, Missouri, Nebraska, Iowa, South Dakota, North Dakota, and Minnesota, Chairman Zada May Cooper reports that from the latest reports of each state lists of names of women druggists were compiled and an effort made to get a woman druggist in each state to act as chairman. Two acceptances were re-

ceived—Mrs. Hampton Ray Kenaston, of Bonesteel, South Dakota, and Mrs. Minnie M. Whitney, of Kansas City. Mrs. Kenaston has done efficient service, writing personal letters to all those actively engaged in pharmacy, and securing one new member—Mrs. Janie A. Hagerty, of Avon, South Dakota.

Mrs. Whitney was furnished a list of names of women pharmacists in the state of Missouri, but at this writing no report has been made, but I am sure that she has done excellent work in interesting the young women pharmacists in the Association. The one woman pharmacist in Minnesota could not serve, the one in Nebraska made no reply, and the woman pharmacist in Kansas did not respond. The chairman wrote forty personal letters to the Minnesota women, ten to North Dakota women pharmacists, and eight to women in South Dakota. To most of these copies of the proceedings of the Women's Section were sent, either of the Nashville or the Detroit meeting, or both. Sample copies of the JOURNAL went to the women in the Dakotas also—but not a single response from any of these was received. Nothing has been done in Nebraska or Kansas. The state of Iowa was pretty well covered last year, and hence no general effort was made this year in Iowa, my work being limited to those few people that I met, whom I had not approached before.

The number of women registered as pharmacists in North Dakota is fifteen and South Dakota has fifteen full registered and ten registered assistants.

District No. 3, comprising the states of Ohio, Indiana, Kentucky, Illinois, Michigan, and Wisconsin, reports:

The greatest part of my effort was put into the state of Wisconsin. From a list of sixty women pharmacists in this state the names of fifty were selected to be addressed. To twenty-five of these known to be actively engaged in the drug business, personal letters giving, chiefly, the objects of the Women's Section, were sent, also an application blank and a folder, "Why Every Pharmacist Should Become a Member of the American Pharmaceutical Association." This little folder briefly stated the objects of the American Pharmaceutical Association, the benefits to be derived from association with the American Pharmaceutical Association, a description of the official organ—the JOURNAL OF THE A. PH. A.—and the favorable comments of the several allied associations.

To nineteen other women pharmacists in Wisconsin went a copy of the proceedings of the Women's Section of either the Nashville or the Detroit meeting and a brief note as to my object in sending them the proceedings, and to twelve other women were sent the "Why Every Pharmacist Should Become a Member of the American Pharmaceutical Association" circular, with my name and address as one of the Membership Committee. Thirty-two were mailed to as many women pharmacists in the state of Kentucky; six to the women in Indiana, six to Illinois, two into Ohio, and two to women located in the State of Missouri.

Owing to insufficient address, nine pieces of mail were returned: these were re-addressed to the women pharmacists in Illinois. Replies were received from three women, regretting their inability to become members, but hoping to take membership at some future time.

One membership was received, that of Miss Lilian Vorsanger, 2354 Milwaukee Avenue, Chicago.

An acquaintance, a travelling saleswoman, kindly consented to call the attention of the women pharmacists whom she meets in the course of her travels to the objects of the American Pharmaceutical Association as she had opportunity, thus giving the personal element, that counts for the most in this line of effort.

Since our last meeting a list of names and addresses of 263 women pharmacists has been compiled from personal items in the drug journals, the druggists' directories, and from various other sources. This list has been filed with the Secretary for future use.

During the month of April, 1915, a thorough canvass was made for women pharmacists in the state of Illinois by the Membership Committee of the Women's Pharmaceutical Association of Chicago. The result of the canvass shows that there are 110 registered women pharmacists, 30 registered assistants, and 48 registered apprentices in the state of Illinois. These data are available for our files. It also shows the willingness of the local women's associations to coöperate in the work of the American Pharmaceutical Association and the Women's Section.

Respectfully submitted,

M. M. GRAY, *Chairman.*

The following letters were sent to Mrs. Gray after she had forwarded her report to the Secretary:

611 INDIANA AVENUE, URBANA, ILL., July 25, 1915.

My Dear Mrs. Gray:

As the time is approaching for the San Francisco meeting, I know that I must send in my report, even if it is *a blank*. I can't tell you how much I regret this, but what can one do to change the set opinions of so-called pharmacists who "see no earthly reason why" they should join the American Pharmaceutical Association, and have not sufficient interest in the matter to treat a solicitor with more than scant politeness when trying to *give them some reasons?*

I have used my ammunition (A. Ph. A. Membership Committee Stationery) faithfully, and, in the case of our local druggists of the Twin Cities, I not only wrote them, and sent the "Why" circular and an application blank, but called on them personally, only to receive a rebuff in every case but one; the one giving as his plea for declining to join the Association at this time that he "could not spare the $5."

The first proprietor of a drug store upon whom I called said he had not seen any letter from our office; "Possibly it was somewhere in the accumulation of stuff not yet looked over," etc. I also inquired as to the fate of various articles of printed matter which we had distributed within the past few months (reprints of various addresses made by Dr. Beal at the I. P. A., at the New Orleans meeting of the A. C. S., etc.), but none of these had been noted by the gentleman, and had presumably found a resting place in the waste-basket.

At another place the proprietor said he "had no prescription business any more, that he sold but little except 'patent medicines,' and that he felt guilty for accepting the people's money for such *slop*"; "that he was not a member of the Illinois State Association, and never expected to be; was in the business because his father was before him, and the sooner he got out of it the better."

Still another is a member of the "United Drug Company's" organization and attends the semi-annual meetings, where, he says, "they do a lot of business and don't spend the time in sight-seeing, side-trips, etc., as the A. Ph. A. members do." Saw no reason whatever for giving out his good money for membership in the latter. And so on to the end of a very tedious round of calls which, I am free to confess, left me rather in a disgusted state of mind as regards our local druggists, who, as one of them said plainly, "are after the dollars," and don't care for the professional side of the business, which brings them no money.

Will give only one more instance of the ignorance and narrow-mindedness with which we must contend in this membership campaign. A pharmacist who has been in business *thirty years* asked me "*Why the American Pharmaceutical Association did not pass laws* to prevent dispensing by the doctors, and also why they did not prevent the big manufacturing houses from taking over all the compounding which properly belongs to the pharmacist." As if the American Pharmaceutical Association *could* pass laws! I tried to show him that the Association is not a law-making body, but that it has a powerful influence with the national law-making bodies, and that it is his duty as a professional man to become a member of the American Pharmaceutical Association and contribute his quota of dues and influence to secure the right sort of legislation touching pharmacy.

Again regretting that I must send you such a report as this, and trusting that other members of the committee have been able to make a better showing, I am,

Sincerely yours,

MARY L. CREIGHTON.

MISS ANNA G. BAGLEY, CINCINNATI, Ohio, July 25, 1915.
Columbus, Ohio.

Dear Miss Bagley:

As a member of the Membership Committee of the Women's Section of the American Pharmaceutical Association, I report the work done by me during the past few months. I have given out all of the literature sent me by the chairman, Mrs. Gray, and have talked American Pharmaceutical Association on every occasion. I enclose a list of the names of

wives of members of Cincinnati Branch of the American Pharmaceutical Association to whom I have talked for the Women's Section. I found a number who did not know there was a Women's Section, but am glad to say that the majority of them were well posted on A. Ph. A. matters, being able to read the monthly publication of the Association. All these ladies wish to be enrolled as members of the Women's Section.

Miss Leichtenfeld, Miss Stier, and Mrs. DeGardner (*née* Kleinknecht), all graduates of the Cincinnati College of Pharmacy, have made application for membership through the local Branch; a few have promised to become members in the fall, and a number expressed a desire to attend a meeting of the Section to know more about the work before becoming members. All these are college graduates, engaged in business, and will be a great addition to the Women's Section. Some of the women thought there might be a possibility of forming branches in the women's organization similar to those of the men's organization.

I am sorry lack of time prevented my being more active in this very good work. My best wishes are for a very enthusiastic convention and future success of both the American Pharmaceutical Association and the Women's Section of the American Pharmaceutical Association.

MRS. C. FENNEL.

The President: That finishes the reports. There are some recommendations in the Secretary's report. Shall we accept all the reports as one, or shall we hold the Secretary's report for discussion? There are some recommendations as to changing the Constitution in that. You cannot accept all of the reports at one time if that is to be considered. Will you discuss that at this time and meeting, or shall we defer it to the next session or refer it to a committee? What is your pleasure?

Mrs. White: I move the Secretary's report be referred to a committee.

(Motion carried.)

The President: We will refer the Secretary's report to a committee. Will some one move to accept the rest of the reports?

Mrs. White: I move they be accepted as read.

(Motion carried.)

The President: They are accepted. Is there any new business to come before the session? If not, this meeting will be adjourned, to meet Thursday afternoon, in the Red Room of the Bellevue Hotel. I hope we will have a quorum to listen to the papers. There are four other good papers, and we also have the election of officers at that meeting. It will be quite important that we have enough present who will remain, and that we will not dwindle down to a mere handful, as we have done to-day. We will adjourn until Thursday.

(*To be continued.*)

SECTION ON HISTORICAL PHARMACY, AMERICAN PHARMACEUTICAL ASSOCIATION

EAST INDIAN VOYAGES OF THE SIXTEENTH AND SEVENTEENTH CENTURIES IN THEIR RELATION TO DRUGS, SPICES AND DYESTUFFS.*

BY ARTHUR W. LINTON.

PORTUGUESE VOYAGES.

At the beginning of the fifteenth century, when Venice had already firmly established herself as mistress of the Mediterranean, the little kingdom of Portugal, on the west coast of the Iberian Peninsula, had hardly begun to think of commerce and exploration. At this period Portugal possessed no vessels better than half-decked sailing craft carrying crews of 36 men. (H. Morse Stephens, "Portugal," p. 144.) However, at a time when most of the noble youth of Portugal saw no road to distinction other than fighting the Moors, one prince of the royal house was granted wisdom to see that there were other things worth while. Prince Henry, known to history as "The Navigator," was the third son of King John I. We read of him: "This prince devised how he might advance the honor of his name and order in the discovery of countries not yet known. He spent his life in single estate, and chose the clear air of Cape St. Vincent, that he might better extend his mathematical theory, the practice thereof in instruments, and the use in sending out ships at his own charge to discover remoter parts. He caused Master James, skilful in navigation and cards and sea instruments, to be brought into Portugal to erect a school of marineship and to instruct in that mystery." ("Purchas his Pilgrimes," i, pp. 9–15.)

From the first, Prince Henry seems to have dreamed of being able to wrest the profitable Indian trade from Venice by finding a sea route to the Spiceries; at any rate, he established on the extreme southwestern point of the continent of Europe the school in which were to be trained the daring navigators who would find and win for Portugal an empire beyond the seas. Here Prince Henry gathered around him a group of choice spirits, not only mathematicians and cartographers, but navigators of experience as well. Here came for instruction, not only the sons of Portugal, but men from other countries.

Prince Henry himself never made an ocean voyage, but from 1418 onward seems to have sent out an exploring expedition nearly every year. The first voyage accomplished little, but in 1419 or 1420 one of Henry's captains discovered (or rediscovered) the Madeira Islands. Succeeding expeditions worked farther and farther down the African coast, until, at the time of Henry's death, in 1463, 1110 miles of coast line had been explored by the Portuguese, as well as the islands of Madeira, Cape Verde, Azores, and Canaries. When Henry passed away, only a relatively small part of the long distance to the Indies had been travelled, but the Prince had done much to merit the gratitude of his countrymen. He had promoted the colonization of the island groups which had been discovered, and successfully introduced in them the culture of the vine and sugar-cane. (Stephens,

* Continued from p. 255, March issue.

" Portugal," p. 145.) He had secured from Pope Martin V a perpetual donation to the crown of Portugal of whatever should be discovered from Cape Bajador to the Indies, together with plenary indulgence for the souls of those who should perish in conquest. (" Purchas his Pilgrimes," ii, pp. 13–14.) Most important of all, Henry had created in the hearts of the Portuguese a determination to continue the national career of exploration.

An enumeration of the various stages in the progress of the Portuguese down the west coast of Africa would be tiresome; however, the following may be noted: In 1434 Cape Bajador was rounded, in 1441 Cape Blanco, in 1445 Cape Verde, in 1447 the Azores were discovered, in 1455 the Cape Verde Islands and the coast of Senegal, in 1462 the mouth of the Niger, in 1484 the mouth of the Congo. Already the Portuguese voyages had extended the knowledge of pharmacognosy, for in the Congo region, if not farther up the coast, the explorers found the plant-producing " Grains of Paradise." This drug or spice was known in Europe long before this time, having been brought overland to Monte di Barca, on the coast of Tripoli, and from thence by the Venetians to Europe. The native name was *Melegeti* or *Melegette,* but because it came from an unknown region and was highly esteemed it became known as " Grains of Paradise." Flückiger and Hanbury mention a record of a curious *fête* held at Treviso, in 1214, in which a sham fortress defended by twelve noble ladies and their attendants was stormed and carried by knights armed with flowers, fruits, sweetmeats, and spices, among the latter being mentioned " *Melegetæ.*" (Flückiger and Hanbury, " Pharmacographia," p. 652.)

To return to the Portuguese and their explorations: The year 1486 was a notable one. In this year an expedition sent out by John II, under the command of Bartholomew Diaz, reached the bold promontory known to us as the Cape of Good Hope. Because he had encountered storms in this vicinity, Diaz reported to his royal master that he had named the cape " *Cabo Tormentosa.*" King John, however, willing to believe that this discovery marked an important advance on the long-sought route to the Spicery, rechristened the cape " *Bona Speranza,*" or Good Hope. (" Purchas his Pilgrimes," vol. ii, p. 17.)

King John was thoroughly imbued with the spirit of discovery, and firmly believed that the Portuguese would eventually find the sea route to India. He took the greatest care to represent to other nations the immense difficulties of the voyages, so far as they had been prosecuted, endeavoring to create the impression that they would have been impossible in ships other than those of the peculiar Portuguese construction. When one of his sea captains and two pilots attempted to desert in order to enter the service of the King of Spain, they were pursued and killed. (" History of Spain and Portugal," Harper & Co., iii, p. 233.)

So determined was King John to reach the Indies by sea that he neglected no means that would further his purpose. Becoming convinced that in India, or on the east coast of Africa, something might be learned in regard to a route around Africa, he sent trusted men to the East to seek such information. The first messenger failed because of his ignorance of Arabic. Having learned to be more careful in his selection, John sent Pedro Covilham and Alfonso de Payva, whose orders were to discover the country of Prester John, to trace the Venetian commerce in drugs and spices, and to gather information in regard to the possibility of reaching India by rounding the southern extremity of Africa. Covilham and Payva went to Alexandria, thence to Cairo, and by caravan to a port on the Red Sea, where they found opportunity to study the methods of the Moorish traders who plied between India and Egypt. At Aden the two separated, Covilham going

to Calicut, on the Malabar coast, Payva starting for Abyssinia, the land of the far-famed Prester John. Covilham was the first Portuguese to sail the Indian Ocean. In India he saw the pepper and ginger plants growing, and was able to secure accurate information in regard to cinnamon and cloves. Returning to Egypt, Covilham learned that Payva had been murdered. He met a messenger from King John, and sent him back with the report that ships which sailed down the coast of Guinea might be sure of reaching the termination of the continent, "and that when they should arrive in the eastern sea, the best direction must be to inquire for Sofala and the Island of the Moon" (Madagascar). Covilham now went to Ormuz to study the trade there, and, having again forwarded reports to his master, went to Abyssinia to do the work which had been assigned to Payva. He made himself so useful to the monarch of Abyssinia that he was constrained to remain in his service during the rest of his life. It is believed, however, that Covilham continued to serve his native land by maintaining a correspondence as long as he lived. ("India in the Fifteenth Century," Hakluyt Society, pp. lxxxi–lxxxviii.) It seems only just to Covilham that his services should receive recognition as an important contribution toward the discovery of the Cape route, as the expedition of Vasco da Gama did not sail until after Covilham's reports had been received.

In the year 1495 Manuel "the Fortunate" came to the throne of Portugal. He continued his father's policy of endeavoring to reach India by sea. It is said that he was encouraged to do so by reading some old letters which he found in a chest of his father's. These letters were from a Venetian merchant who had executed important commissions for King John, and, having received favors from his royal patron, had consented to tell him something of Venetian commerce. He wrote "of India, its riches and trade, of the bringing of rich merchandise and aromatic spices to Alexandria, from which the Turk drew great profits, and from that place the merchandise came by the trading of merchants to Venice. This was the greatest trade there was in Venice." (Gaspar Correa, "Voyages of Vasco da Gama," Hakluyt Society, p. 16.)

After much deliberation the King selected Vasco da Gama as the captain-general of the fleet which was being fitted out. Da Gama gave the most careful attention to the details of provisions and equipment. He encouraged the sailors, who had been hired for the voyage some months in advance, to learn trades, such as carpentry, rope-making, and blacksmithing; promising additional wages to each man who thus increased his usefulness.

It is said that the intended voyage was very unpopular among the people of Portugal, who believed that no adequate compensation could be derived from so wild and hazardous a venture. Camoëns, Portugal's most illustrious poet, who penned the "Lusiad," an epic of the discovery of India, has personified the populace in a venerable man who appears on the shores among those who watch the departing vessels. The aged one pronounces a curse upon all those who seek the vanities of honor and dominion, especially upon those who leave their native land to seek empire upon unknown shores. His malediction is, in part, as follows:

> What new dread horror dost thou now prepare!
> High sounds thy voice of India's pearly shore,
> Of endless triumphs and of countless store;
> Of other worlds so towered thy swelling boast,
> Thy golden dreams when Paradise was lost,
> When thy big promise steeped the world in gore,
> And simple innocence was known no more.

* * * * * * * * *

Cursed be the man who first on floating wood
Forsook the beach and braved the treacherous flood!
Oh! never, never may the sacred Nine,
To crown his brows the hallowed wreath entwine;
Nor may his name to future times resound;
Oblivion be his meed, and hell profound!

—CAMOËNS, *Lusiad*, Mickle, trans., Book IV.

The little fleet of three vessels sailed from Lisbon, June 20, 1497, rounding the stormy cape on November 20. Shortly afterward a beautiful river was entered, and here a pause was made for refreshment and for refitting the vessels. One of the ships had been damaged, and this was burned, all of the metal parts being saved for possible use in repairing the others. The other vessels were beached and scraped.

Reaching Mozambique, da Gama endeavored to obtain information in regard to the route to India. Upon the Sheik's inquiry as to what merchandise he sought, da Gama showed him pepper, cinnamon, and ginger. The Sheik promised to provide pilots who would guide him to a country where his ships could be filled with these spices. However, the Sheik proved to be treacherous, and da Gama found it necessary to look further for the pilot he needed. He was more fortunate in his dealings with the King of Melinda, on the Zanzibar coast. The Melindans showed every kindness to the voyagers. Pilots were promised, but the Portuguese were advised to wait for the season of favorable winds, and this was done. Camoëns tells us that the King and his court were fully informed of the glories of Portugal and the martial exploits of her warriors by a long historical recital by da Gama. As Camoëns gives us da Gama's recital, the deeds of the sons of Lusitania lost nothing in the telling. Doubtless the Melindans were duly impressed. (Camoëns, "Lusiad," Books III and IV.)

The time of favorable winds having arrived, the hospitable King provided the Portuguese with two of his best pilots, as well as with provisions for the voyage. Leaving Melinda in July, 1498, they sailed with a fair wind for twenty days, at the end of which time they sighted a mountain on the coast of India. Running along the coast, they reached the harbor of Calicut (not to be confused with Calcutta). Here they were given a friendly reception, and assured that they would be allowed to purchase pepper and other spices. All would have gone well had it not been for the Moors. These shrewd Moslem merchants, who had been established here for many years, and who controlled the traffic between India and the Red Sea, very soon saw that their trade was ruined if the Portuguese were allowed to establish commercial relations in Calicut and other cities of India. The Moors guessed that if, on this initial voyage, the Portuguese were able to secure cargoes of spices, they would soon monopolize the business. So by threats and bribes they sought to influence the court officials to incite the King to hostility towards the Europeans.

However, after long negotiations, the privilege of trade was granted, and a temporary factory or trading post was set up in a house on the shore. The goods sent ashore for barter consisted of coral, vermilion, quicksilver, copper, and amber, as well as Portuguese gold and silver coins. A table covered with green cloth, and a wooden balance with weights were also landed. On the first day quantities of pepper were brought from the King's storehouse, and the entire day was spent by the Portuguese factors in weighing this pungent condiment, the high price of which in Europe had been instrumental in bringing about the Portuguese discovery. In the evening, having reckoned the value of the pepper

weighed, the factor told the King's officials to select from the stock whatever they wished, to the value of the pepper, the price of the Portuguese merchandise having previously been agreed upon. The goods selected were cut coral, copper, and quicksilver. Such was the first day's trade between Europeans and the natives of the Indies, such the beginning of a traffic that was to bring to the eastern ocean the fleets of several nations, and to result in centuries of strife and bloodshed.

A curious feature of these first days of trade at Calicut was that each party to the transaction believed that he was outwitting the other. So trifling was the native price for pepper compared with that to which the Portuguese had been accustomed at home, so precious did the European commodities appear to the natives, that each party believed itself to be driving a keen bargain. Da Gama had instructed his factors to be liberal in their dealings with the natives, to accept all spices offered without question in regard to quality, and to give good weight on the wares given in exchange. The King's officers soon learned that the Portuguese would not protest, even if the spices offered were of inferior quality, and seem to have worked off a lot of second-grade pepper and ginger. The wily da Gama cared little for this; he knew that if he could return to Lisbon with cargoes of pepper, thereby demonstrating that his ships had reached the long-desired land of spices, the next expedition would be powerful enough to protect Portuguese interests.

For a number of days the weighing went on, the Portuguese purchasing not only pepper, but cinnamon and ginger. The Moors did not cease their efforts to cause trouble for da Gama, and at last he was treacherously arrested. The Portuguese accounts differ in regard to the incidents which followed, and the exact truth is not obtainable. However, da Gama was liberated after a time, and sailed from Calicut, secretly vowing vengeance on King and Moors. During this entire voyage he was very careful to avoid any serious clash with natives, as such an incident might easily have proved disastrous to his weak forces. His conduct on futures voyages, when he had the backing of strong military forces, was very different.

The King of the neighboring State of Cananor had heard of the visit of the Portuguese to Calicut. When the Portuguese approached his harbor he sent messengers in boats to beg them to trade with him, promising all the spices they needed. An agreement was reached, and the King sent out in boats sufficient spices to complete the lading of the vessels. In paying for these, the Captain-general was very liberal, sending coral, vermilion, quicksilver, and copper basins amounting to fully twice the value of the spices received, as prices were in that market. The King now visited the vessels, and presents were exchanged, after which da Gama was ready for the homeward voyage. A stop was made at Melinda. Here again was an interchange of presents. The King sent to the Queen of Portugal a large piece of ambergris. To King Manuel he sent a letter of friendship written on a leaf of gold.

As the vessels ran down the east coast of Africa on the return voyage, da Gama gave orders to his pilots to write in fullest detail the directions necessary for future navigations of this coast. The cape was rounded without misfortune. When the sailors found that they were again headed northward they embraced each other with joy and knelt to offer praise to Heaven. Terceira, in the Azores, was reached at the end of August, 1499, and the vessels anchored here for a few days. As soon as da Gama's vessels entered this harbor a number of boats raced for Portugal to carry to the King the glad news of da Gama's return. The ships

were by this time leaking so badly that it was difficult to keep them afloat, but the Captain-general refused to transfer his cargoes to other vessels. He reached Lisbon about September 18, 1499 (conflict in dates), and was greeted by city and court with demonstrations of joy.

Vasco da Gama was richly rewarded for the service which he had rendered to king and country. The title of "Dom" was conferred upon him, and he was presented with 20,000 cruzadoes in gold, and, further, "the perpetual right of 200 cruzadoes which he might put out every year of his own money on cinnamon in Cananor . . . these purchases he might stow on any ship without freight or duties and bring them free of charge to his own house . . . this the King granted him as long as India lasted, for an inheritance to his principal heir." Various favors and recompenses were granted to the captains and officers, one and all. It was ordered that to each mariner of the fleet "should be given ten pounds of each spice for their wives to divide with their gossips and friends. . . . Great recompenses were given to one and all, because at this time the quintal (100 pounds) of pepper was worth in Lisbon 80 cruzadoes, that of cinnamon 180, of cloves 200, of ginger 120, mace 300, nutmeg 100. All remained rich and satisfied." Well might the King be liberal in his gifts, for it was found that for every cruzado invested in the voyage a return of 60 was yielded. The King went with Dom Vasco to the convent of Our Lady of Guadalupe to offer a rich gold necklace, which had been sent by the King of Cananor, together with some rich stuffs, a bag of each spice, and a piece of benzoin, the latter probably to be used as incense. (Although many authorities have been consulted which describe in more or less detail Vasco da Gama's first voyage to the Indies, most of the story as given above is taken from "Voyages of Vasco da Gama," translated from the Portuguese by E. J. Stanley, H. S. The quotations are from this authority.)

Doubtless the motives which had influenced Prince Henry the Navigator and the various Portuguese kings of the fifteenth century to send out exploring expeditions were very complex. We believe that a desire for glory and renown and an inspiration to extend the dominion of the throne of Portugal influenced the princes and their captains. That there was also a desire to extend Christianity to heathen lands was doubtless true, since priests were sent to Indian very soon after the discovery of the way thither. However, it seems certain that the dominating motive in moulding the Portuguese policy was the desire to gain the trade in spices and other Oriental wares. Vasco da Gama had shown the Sheik of Mozambique pepper, cinnamon, and ginger, and asked to be directed to the land where these were found. Once on the Malabar coast, he had spared no pains to secure cargoes of these spices, and, having obtained them, lost no time in making his way home, assured of a welcome. Stanley, the translator of Gaspar Correa's work, which has formed the basis of our story of da Gama, considers that Correa has made it very plain that the methods used by da Gama and his captains evidenced a greed of commercial gain. (Correa, "Voyages of Vasco da Gama," H. S., p. xxxix.) However that may be, the return of 60 to 1 on the investment in the first voyage was sufficient to cause Manuel to resolve to send without unnecessary delay such a fleet as could carry great cargoes sufficient to bring him untold wealth. (Correa, "Voyages of Vasco da Gama," H. S., p. 275.)

Pedro Alvarez Cabral was the commander of a fleet of 13 ships which sailed from Lisbon, March 8, 1500. Being blown far to the westward of the African coast by a great storm, Cabral sighted land on April 23; this land he named Brazil. One of the vessels hastened back to Lisbon with the tidings of this dis-

covery, while the others went on their way. The discovery of Brazil had an important bearing on the Indian voyages, for Bahia, on the Brazilian coast, was frequently made a stopping place to secure water, fruit, and other refreshments. Only six ships of Cabral's fleet succeeded in rounding the Cape. Reaching Calicut, Cabral, like his predecessor, had trouble with the Moors and with the King. Becoming embroiled with the Moorish merchants, he destroyed some of their vessels after having loaded the cargoes into his own ships. Some of his sailors having met death ashore, Cabral visited a terrible vengeance upon the city. The unfortunate King learned that he had to deal with a race who were not only able to defend themselves, but to wreak revenge upon those who dared to deny them what they demanded. This was only a foretaste of the dealings between the Portuguese and the eastern peoples. Cabral established friendly relations with a number of potentates on the Malabar coast, and settled factories. He returned with very heavy and valuable cargoes of spices. (History of Spain and Portugal, Harpers, iii, p. 244.)

A glance at the story of Vasco da Gama's second voyage will give us further insight into the character of that hero, as well as into the methods which the Portuguese were using to secure the monopoly of the spice trade. Da Gama sailed from Lisbon in 1502 with 15 caravels (some accounts say 19 or 20). On this voyage, instead of following the east coast of Africa well up toward Cape Guardafui, and then crossing the Arabian Gulf to the Malabar coast, he left the continent while still opposite the Mozambique coast; and struck boldly across the Indian Ocean for his destination, thus greatly shortening the voyage. The Admiral detached a squadron under Sodre to explore the coast of Arabia. ("Purchas his Pilgrimes," x, p. 22.)

We find da Gama on this voyage sending the following message to the King of Baticola, one of the Indian potentates: "This is the fleet of the King of Portugal, my sovereign, who is the Lord of the sea, of all the world, and also of this coast, for which reason all of the rivers, and forts which have got shipping have to obey him and pay tribute . . . and this as a sign of obedience . . . neither trading in pepper or bringing Turks, nor going to the port of Calicut . . . for any of these three things; the ships which shall be found to have done them shall be burned with as many as be captured in them. Let the King send me an answer; if it be not a good one I will send and burn ships and town, and cause much harm to be done." (Correa, H. S., p. 311.) We learn from this declaration that already the Portuguese were claiming a monopoly of the pepper trade, that they were undertaking to dictate as to where and with whom the native states might trade, and that they had determined to ruin the commerce of such petty kingdoms as had not seen fit to submit to the demands of the intruders. Let us see whether da Gama was prepared to back his threats with actions.

On this same voyage he captured a richly-laden Moorish vessel *en route* from Mecca to Calicut. After the cargo had been transferred to his own vessels da Gama ordered that the captured vessel, with its crew and passengers, numbering about 700 souls, be burned. The Moors, among whom were wealthy merchants plead for their lives, and offered, if da Gama would but conduct them to Calicut, to fill all of his vessels with pepper as a ransom. Da Gama refused the offer, contrary to the advice of his own officers, and the ship was fired. The desperate Moors did not perish, however, until after they had succeeded in boarding one of the Portuguese vessels and inflicting some loss of life upon its company. (Correa, p. 313.) Greater atrocities were to follow before the fleet left India. Certain vessels from Coromandel, on the east coast of India, bound for Calicut, fell

into the hands of the Portuguese and were plundered. The unfortunate mariners were bound, their hands, ears, and noses lopped off, their teeth knocked down their throats, and the whole bleeding, writhing mass loaded into one of the captured vessels, which was fired. The severed members of all of the victims were put into another ship and sent ashore as an object lesson to all who should dare to question Portuguese authority. (Correa, p. 331.) Where he found the natives submissive, the Admiral established factories or trading stations, and left agents with stocks of goods for barter. This was done at Cananor and at Cochin. The principal commodities offered by the Portuguese in trade continued to be coral, vermilion, quicksilver, brass, and copper, although they landed, also, caps, mirrors, and other trinkets. Pepper was the product purchased in greatest quantity; ginger and cinnamon, however, were taken in large amounts.

After a long period of retirement, the reason for which is not fully understood, Vasco da Gama made a third voyage to the Indies. In the meantime new honors had been conferred upon him. He was now Count of Vidigueria, and ranked as Admiral of the Indian Seas, as well as Viceroy of India. He arrived at Goa, now the seat of Portuguese power in India, September, 1524. He travelled and lived in regal splendor, was served by men bearing silver maces, maintained his major-domo and equerries. He was accompanied by a brilliant soldiery, officered by sons of noble families. He came endowed with the King's own power of justice and revenue over all the dominion beyond Cape Bona Speranza. Our narrator tells us that, despite his arrogance and love of pomp and display, da Gama was not corrupt, as were so many of the Portuguese officials of his own and later times, but still remained true to the interests of his master. He gave particular attention to the supervision of the royal revenues, and declared that it was his intention to make the King rich. However, his career as Viceroy was a short one; he died in Goa, December 24, 1524. (Correa, pp. 380–381.)

Stanley considers that Vasco da Gama is not to be ranked with Columbus and Magellan, both of whom were the originators of the projects which they prosecuted to success, and both of whom, in their voyages of discovery, commanded men not their own countrymen and who were not fully in sympathy with the leaders. Vasco da Gama was appointed by Manuel to take charge of an expedition which had been dreamed of and prepared for by Portuguese princes for many decades, and considerable information in regard to the route of which had already been gathered. He should, however, be given credit, thinks Stanley, for indomitable perseverance, wise judgment, and magnificent qualities of leadership. His record is stained by deeds which, even for the age in which he lived, were relentlessly cruel. His fame is due in great measure to the epic of his voyage as told by his gifted countrymen, Camoëns, in the *Lusiad*. (Introduction to "Voyages of Vasco da Gama," H. S., p. xx.) Perhaps it would not be fair to da Gama for us to accept in full Stanley's estimate of the ability of that daring man. Although on his famous voyage da Gama commanded men of his own race, they were far from loyal through all of the vicissitudes of the voyage. Indeed, it became necessary for him to put his pilots in irons to prevent them from inciting the crews to open mutiny. Da Gama did what a man then living, a navigator of no mean ability, namely, Bartholomew Diaz, who first rounded the Cape, had declared to be impossible. His route was not always that of a coasting voyage, as has sometimes been said; at certain stages it was necessary for him to give the continent a wide berth to avoid dangerous shore currents. On his second voyage, as we have seen, he found his way for thousands of miles across the trackless Indian Ocean from Mozambique to India. When all has been said

that may be to detract from his fame, Vasco da Gama is worthy to live in history as a great discoverer.

Portuguese expeditions to the Indies now followed one another in rapid succession. Every year or oftener, fleets of from ten to twenty vessels left Lisbon harbor on the long voyage, carrying, in addition to their crews, strong bodies of soldiery. From da Gama's first voyage in 1497 until the year 1521 there were despatched 33 fleets, totalling 220 ships. From that time on throughout the entire century, probably hardly a year went by without a powerful expedition leaving for the East. (Introduction to "Voyages of Sir Henry Middleton," H. S., p. vi.) The policy followed during the first few years of the century was to establish factories as rapidly as possible on the African and Malabar coasts, by peaceful means if possible, but using force if the natives proved contrary; further, to utterly destroy all efforts of the Moors to carry on the commerce which had been so flourishing before the Portuguese came. Little effort was made at this period or later to acquire territorial dominion; the Portuguese had come to trade rather than to gain an empire. In this their policy was quite different from that of the Spaniards in the New World. (Introduction to "Commentaries of Alfonso d'Albuquerque," H. S. p. xv.)

Francisco de Almeida, the First Viceroy of India, sailed from Lisbon in 1505 with a fleet of 22 vessels. He not only promoted trade, but garrisoned forts at Cananor and several other places in India. Probably the man who did most to firmly establish Portuguese power in the Indies was Alfonso de Albuquerque. Albuquerque combined the qualities of a diplomat with those of a military commander. He exercised splendid judgment in the selection of strategic points for fortifications which would enable the Portuguese to dominate the commerce of all southern Asia and neighboring islands.

One of the strongholds which Albuquerque secured for Portugal was Ormuz, situated on an island at the narrow entrance to the Persian Gulf, and therefore, if fortified, able to control the entrance and exit of vessels. For years an important trade route between the Indies and the Mediterranean had passed through the Persian Gulf, up the Euphrates to a point opposite Aleppo, thence by caravan to that city. Although, during the period of Venetian ascendency, this route was not as much used as that by the Red Sea to Alexandria, it still retained much of its importance. It will be recalled that Covilham had been sent to study the commerce of Ormuz before da Gama's first voyage. The value of Ormuz was further enhanced by the fact that it controlled the pearl fisheries of the Persian Gulf. Of the many available accounts of the commerce of Ormuz at the beginning of the sixteenth century, I quote from that of Duarte Barbosa, a keen and accurate observer. He says, in part: "In the mouth of the Sea and Strait of Persia is a small island in which is the city of Ormuz . . . a great centre of trade. They bring here all sorts of spices, precious stones, pepper, ginger, cinnamon, cloves, mace, nutmegs, long pepper, aloes-wood, sandal-wood, Brazil-wood, balsam, tamarinds, rice, cocoanuts, rubies and other stones, benzoin, porcelain, all kinds of cotton goods. . . . They also bring to Ormuz (for India) quicksilver, vermilion, rosewater, brocades, silks, woollens, and camelots. From China and Cathay came by land, silk in skeins, rare metals, and rhubarb . . . from Baharem, seed pearls and pearls; from Arabia and Persia, horses, which they carry to India, as well as salt, dates, raisins, and sulphur." (Duarte Barbosa, "Coasts of East Africa and Malabar at Beginning of Sixteenth Century," translated by E. J. Stanley, H. S., p. 42.) From another source we get this picture of Ormuz: " . . . greate traffic for all that is staple of all India, Persia,

Arabia, and Turkie . . . and commonly it is full of Persians, Armenians, Turks and all nations, as also Venetians, which be there to buy spices and precious stones; . . . out of Arabia various sortes of drugges for Poticaries, as Sanguis Draconis (Dragon's Blood), manna, Mirre, Frankincense and such like, and goodly horses . . . now to know the cause of so great traffique . . . twice every year commeth a great company of people overland called Caravanes, which come from Tripolis, on the coast of the Mediterranean Sea . . . every year twice, in months of Aprill and September. A Captain and certain hundredths of Janissarries (Janizaries) convey the caravan to town of Bassora (junction of Tigris and Euphrates), from whence by water to Ormuz." (Jan Huyghen van Linschoten, H. S., pp. 47–48.)

We can easily understand how the Portuguese might covet a city of such commercial importance. Barbosa tells us that a Portuguese fleet under the command of Albuquerque appeared before Ormuz, that there was a failure to come to an understanding in regard to trade, and that a great battle ensued, in which the Moors were routed. The latter then agreed to allow the Portuguese to build a fort, but, as they repented of this, further combat followed, and the city and island became tributary to Portugal. Ormuz continued to be one of the strongholds of Portugal until captured by the English and Persians in 1622.

Even more important to the future of the Portuguese in India was Albuquerque's conquest of Goa. This city was built on an island at the mouth of the river Mandona, on the Malabar coast. It was a dependency of the kingdom of Deccan. At this period it was a prosperous city and an emporium of trade. Albuquerque, in 1510, found an excuse for attacking the city in the fact that its ruler headed a conspiracy of Moorish merchants to build in Goa a fleet for the purpose of driving the Portuguese out of India. Albuquerque heard of the plan, assembled his forces, made an attack and utterly defeated the sea and land forces of his enemies. (Barbosa, H. S., pp. 75–76.)

Albuquerque found in Goa a flourishing commercial city possessed of a good harbor, in a position easily defensible, and centrally located. Quick to recognize these points of advantage, he determined to make Goa the capital of India. He fortified the island, and under him and succeeding viceroys the city rose to regal splendor and almost fabulous wealth. Although its glory has long since departed, it is one of the few footholds in Asia retained by the Portuguese through all the vicissitudes of the centuries. A glimpse of Goa in the height of its magnificence will be given later.

For a number of years after da Gama's first voyage, the Portuguese devoted all of their energy to establishing themselves on the African and Malabar coasts. However, their ambition, or rather their greed of financial gain, caused them to cast longing eyes on the Farther East. They learned that many of the products they were purchasing on the Malabar coast were coming to them at second and third hand. Pepper and ginger were produced in abundance on this coast, but cloves, nutmegs, mace, camphor, and benzoin came from far to the eastward. A bahar (5 quintals, or 500 pounds) of cloves, which was worth 2 ducats in the Moluccas, was worth 14 ducats by the time it reached Malacca, and 500 in Calicut where the Portuguese received it. (At this period it was worth 1680 ducats in London.) (Tschirch, "Handbuch der Pharmacognosie," p. 730.) Further, the Portuguese learned that the Moors were carrying on a trade between the islands and the Red Sea ports. Here, then, was a portion of the commerce of the Indies, which did not pass through Portuguese hands, from which they were deriving no revenue. This could not be tolerated.

As early as 1505 Almeida reached the island of Ceylon, where much of the cinnamon was and is produced. In 1509 an expedition reached the port of Malacca, on the straits of the same name. Malacca was at that time a thriving commercial city of 150,000 souls, a market much resorted to by merchants from Arabia, India, China, and the great archipelago to the southeast. A foothold in Malacca was obtained only after severe fighting. Singapore, down the Straits, at the tip of the Malay Peninsula, was reached shortly after Malacca. (Tschirch, p. 730.) In 1511 three ships sent out by Albuquerque, under d'Abreo, coasting along the south of the great islands of Sumatra and Java, reached the Banda Islands and Amboyna, the sources of the world's supply of nutmegs and mace. In 1512 a ship of this same squadron, commanded by Senano, leaving Banda, succeeded, after many misfortunes, in reaching the true Moluccas, a group consisting of Ternate, Tydore, and several other very small islands, frequently known as the "Clove Islands." These are supposed to have been the first Europeans to tread these tiny islands, the desire for control of which was to cause endless strife between Portuguese, Spanish, Dutch, and English, as well as abject misery to the islanders themselves. Marco Polo and some later travellers had gone no farther east than Java. (Tschirch, p. 731; also Purchas, ii, p. 83.)

In June, 1513, we find Manuel of Portugal writing to the Pope of the successes of his commanders in India. He informs the Pope that Alfonso d'Albuquerque sailed to Malacca, between Sinus Magnus and the Ganges estuary, and found it a town of immense size, abounding in spices, pearls, gold, and precious stones. The place was captured and a fortress built. The King of Ansiam (Siam) sent a golden cup with a carbuncle and a sword as a pledge of amity. Returning to India, d'Albuquerque found Goa, formerly won with great bloodshed, attacked by Moors, whom he defeated. (Calendar of State Papers, Colonial, East Indies, 1513–1616, pp. 1–2.) It is significant to note that Manuel mentions spices first in the list of products of this wonderful city of the East.

In the course of a few years the Portuguese tightened their grip upon the commerce of the Indies, until from the Cape of Good Hope to the Moluccas they held it almost entirely in their control. The Moors continued to do a little surreptitious independent trading, but it was small in volume. The Spaniards early began to make trouble in the Moluccas, of which we shall learn later. But during the sixteenth century Portugal may be said to have held a monopoly on the trade in the spices, drugs, and dyestuffs of the East.

She had soon obtained a foothold in China. During the ages past the products of China had reached Europe by several indirect routes. In part they were carried across the entire breadth of Asia by caravans to the Caspian or Mediterranean; in part, as we have seen, by caravan to Ormuz and thence up the Euphrates and so to the Mediterranean ports. Chinese junks had also traded to Malacca, where their goods passed into the hands of the Moors, who carried them to Ormuz, Aden, or Suez. All of these routes were exceedingly expensive, which explains the fact that during the Middle Ages rhubarb was one of the most costly drugs used in Europe.

"But from yeere 1554 Lionell of Sosa . . . made a covenant with the Chinese that they would pay their duties and that they should suffer them to doe their businesses in their ports. And since that time they doe them in Canton, which is the first part of China, and thither the Chinaes do resort with their silks and Muske which are the principal goods the Portuguese buy in China." (Purchas, xi, p. 541.)

The foregoing, taken from the journal of Gaspar da Cruz, one of the early

Portuguese missionaries to China, refers to the colony at Macao. From another source we learn that "Machan, or Makau, is inhabited by Portuguese who traffic with the men of Canton . . . but the Portuguese may not go thither . . . they suffer the Portuguese to choose a factor among themselves who in all their names is licensed to goe to Canton, there to buy what they desire, but at night he must lye in the suburbs without the towne." (Linschoten, H. S., p. 145.)

A travel story which serves not only to throw light upon the methods of the Portuguese, but also to show how large a part of the merchandise exported from those countries consisted of drugs and spices, is that of M. Cæsar Fredericke, a Venetian merchant, who travelled in the Far East from 1563 to 1581. The story is very lengthy, and only brief extracts will be given. Fredericke went by caravan from Aleppo to the Euphrates, down that stream by boat to Bassora, where he reshipped for Ormuz. Since we have already seen something of the commerce of Ormuz, we will pass on to Goa. Among the wares received in this city for distribution to various ports of the Indies and for shipment to Europe, Fredericke mentions the following: "All sorts of spices, silks of China, Sandols (sandalwood), elephant's teeth (ivory), velvets of Vercini, . . . great quantity of Indico (indigo), dried ginger and conserved myrabolans, . . . great store of sugar, great quantity of cotton, abundance of opium, assafetida, other sorts of drugges, and precious stones."

He mentions the city of Chaul, on the Malabar coast, where he saw many cocoanuts. He gives a very detailed description of the numerous uses made by the natives of this nut and of the other products of the tree which bears it. "There goeth forth out of Chaul for Malacca, for the Indies, for Macao, for Portugal, for the coasts of Melinda, for Ormuz, indico, opium, cotton, silke, fetida, yron, corne, and other merchandise." Among the products of the kingdom of Cananor are enumerated: "cardamomuma, pepper, ginger, honie, great nuts (cocoanuts), areka." Of the areka he says, "which fruit they eat in all these parts of the Indies . . . with the leafe of an herbe which they call Bettell (Piper Betel), family *Piperaceæ*, like unto our Ivie leafe . . . they eat it made in plaisters with the lime made of Oister shells . . . and it is used daily . . . when this people eate and chawe this in their mouths it maketh their spittle to be red like unto blood, and they say it maketh a man to have a very good stomacke and a sweet breathe, but in my judgment they eat it rather to fulfill their filthie lustes and of a knaverie, for this Herbe is moyst and hote." The above is one of many descriptions of the betel-chewing habit found in the journals of the travellers of this and earlier periods. All the writers describe the habit much as Cæsar Fredericke has done.

Speaking of the pepper trade at Cochin, our traveller says that the officers of the King of Portugal made a contract for the price of pepper, "and by reason of that agreement, the price can neither rise nor fall, which is a very low and base price, and for this cause the villains bring it to the Portugalls green and full of filth. The Moores of Mecca, that give a better price, have it cleane and drie and better conditioned. All the spices and drugs that are brought to Mecca are *stollen from thence* as *contraband*." (Italics mine.)

Fredericke says that in the Island of Zeilan (Ceylon) there is much fine "Sinamon" (cinnamon) as well as pepper. "Nuttes" (cocoanuts), and "Arochoe" (areca), also "Christall Cat's eyes." He describes the gathering of cinnamon, which he took great pains to go to see, in spite of the fact that the Portuguese were at that time in arms against the islanders. "They cut the barke round about in length from knot to knot, or from joint to joint, above and

below, and then easilie with their hands they take it away, laying it in the sun to drie. . . . The next yeare it will have a new barke, and that which is gathered every yeare is the best Sinamome. . . ."

In Sumatra, we are told, are found great store of pepper, ginger, and "Benjamin" (benzoin). He tells us how the Portuguese used the strategic position of Malacca to aid them in controlling the commerce of Farther India, and to derive a revenue therefrom: "All the ships that sail in these seas . . . are bound to touch at Malacca to paie their custome . . . and if by night they escape away, then they fall into a greater danger after, for if they come into the Indies and have not the seal of Malacca, they pay double custom. The sailing from Malacca toward the east is not common for all men, as to China and Japan, but only for the King of Portugal with leave granted."

Fredericke tells us that each year one galleon of the King's leaves for the Moluccas (Ternate and Tydore) to lade cloves, and one for Banda to lade nutmegs and mace. The trade of these three was a monopoly of the Portuguese crown. The principal merchandise leaving China he states to be "gold in plates, silk, damask, taffeta, quantities of muske, quicksilver, cinaper (cinnabar), camfora, infinite variety of porcellane ware, and roots of China (Smilax China). The Rhubarbe commeth from thence over lande by way of Persia, because that every yeare there goeth a great Caravan from Persia to China."

The Portuguese commander of Malacca sent every year a small ship to Timor (seven or eight hundred miles east of Java) to load "white Sandols," the supply of the best quality of this much esteemed aromatic wood being found in that island. He also sent a vessel to "Canchin China" to get "wood of Aloes" (the wood of *Aquilana agallocha,* formerly much used as incense. Not to be confused with the drug aloes.) At this point in his narration, Fredericke extols at length the "excellent gentle vertue" of the Nypa or Nypher wine (a beverage made by fermenting the juice of the Nyper palm), which he says will cure even if "one were rotten with French pockes."

As the products of Pegu (in lower Burmah) are given gold, silver, precious stones, benjamin, long pepper, lead, "lacca" (lac or shellac), rice, wine, and sugar. Our author tells us of a speculation in opium which he made. Knowing that opium was very dear in Pegu, he went to Cambaya, where he invested 2100 ducats (every ducat 4 pounds 2 shillings, about one dollar) in opium, thinking to make a handsome profit by selling at Pegu. However, just one day before he reached Pegu, a ship carrying a great amount of opium was driven into that harbor by a storm. When Fredericke arrived he found that "opium was now at a base price . . . so that I was glad to stay two years in Pegu unless I would have given away my commodite."

Cæsar Fredericke also undertakes to enumerate the principal products of India and adjacent countries, with information as to where and how each is obtained. A few of his statements may be of interest.

"The cloves come from the Moluccas, which are two islands (Ternate and Tydore) not very great, and the tree that they grow on is like to our Laurell tree."

"The nutmegs and maces, which grow together, are brought from Banda . . . the tree is like to our walnut tree." (Nutmegs and mace are both obtained from *Myristica fragrans,* the former being the kernel of the seed, the latter the arillode partly enclosing the seed.)

"All of the good white Sandol is brought from the island of Timor. Camfora, being compound, cometh all from China, and all of that which groweth in canes

from Borneo, and I think that this Camfora (the latter kind) cometh not into these parts, for that in India they consume great store, and that it is deare." The author here distinguishes between camphor (from *Cinnamomum camphora*) and Borneo camphor (from *Dryobalanops aromatica*). From references to camphor in early records it is frequently difficult to determine which kind is referred to. Garcia da Orta, whose work, "Colloquios dos simples e drogas he cousa medicinais da India," was published in Goa in 1563, was probably the first to clearly differentiate the two camphors. (Clusius, "Aromatum Medicamentorum Simplicium Historis," Antwerp, 1613, pp. 36–39.) Borneo camphor was much used in India by the wealthy in connection with the betel-chewing habit. It was used also in celebrating the funeral obsequies of Indian princes. (Flückiger and Hanbury, "Pharmacographia," pp. 512–517.)

Fredericke gives an entirely erroneous account of the manner of obtaining musk, in brief his explanation being that it was made by pounding an animal with stones and putting the dried mixture of flesh and blood into sacks made of the skin of the animal. This explanation, or a very similar one, is found in several of the old records. Musk really consists of the preputial follicles of the musk deer (*Moschus moschiferus*), a native of Tartary and Siberia. Musk was held in even higher estimation during the Middle Ages than at present as a perfume. ("The Voyage and Travel of M. Cæsar Fredericke," Hakluyt's Voyages, v, pp. 365–449.)

A picture of the viceregal city of Goa, as it was seen at the pinnacle of its glory near the close of the sixteenth century, will give us a conception of the immense wealth which accrued to the Portuguese from their traffic in the products of the Indies. We may have called to our attention some of the factors which were working to destroy the proud structure which the Portuguese had reared.

Jan Huyghen van Linschoten's description of Goa as he saw it during his six years' residence (1583–1589) is one of the best that has come down to us. From it we learn that Goa was the official residence, not only of the Viceroy, but of the King's counsel and the Archbishop of the Indies. The Viceroy held office for three years, and seems to have found little time to devote to the king's business, since the first year was consumed in learning the "customs and manners" of his position, the second in industriously accumulating treasure for himself, and the third year in getting his accounts into order so that he would not be surprised by the new incumbent. The Portuguese of Goa, no matter how humble their station had been at home, were all gentlemen, and were served by slaves, who were very plenty and cheap. Many Portuguese men married native women, the children of such unions being called mesticos. He writes of the King's Hospital located at Goa, and says that of the 500 patients who entered yearly few came out alive.

Linschoten mentions most of the countries of southern Asia as represented among the merchants who gathered at Goa. A fair or market was held every morning between the hours of seven and nine. Among the principal commodities offered for sale were "Arabian horses and all kinds of dried drugs, sweet gummes fine and costly." Many slaves, both men and women, were also offered for sale in this market.

Most of the Portuguese ships for India went directly to Goa and there unloaded. Linschoten informs us, however, that they came out with very light cargoes, most of the spices and other commodities purchased being paid for at this period in coin. One great ship yearly went directly to Malacca, not calling in India proper unless in distress for water. Each ship was manned by about

500 men, and of these, as many as thirty or more commonly died on the outward voyage. (Jan Huyghen Linschoten, H. S., vols. i and ii.)

The narrative of Pyrard de Laval was written about 1618. This observer confirms many of Linschoten's statements, and gives some additional matter of interest. He goes into detail in regard to the magnificence of the establishment maintained by the Viceroy. This dignitary, he says, never went abroad into the city without having his intention of doing so proclaimed on the previous day, in order that all nobles and officials might assemble on horseback to honor his progress. De Laval places the Viceroy's annual salary at 30,000 cruzadoes, but states this amount was only a trifle compared with the vast sums amassed by means of gifts, bribes, and sale of privileges.

The Church enjoyed great prosperity in this golden era of the history of Goa. The city boasted a cathedral of superb architecture, besides numberless churches and the houses of many religious orders. The Inquisition also was firmly intrenched. De Laval's estimate of the royal hospital is quite different from that of Linschoten. He considers it one of the finest in the world in every respect. He was himself a patient in it, and speaks in terms of highest praise of the treatment and care. Possibly the management may have changed since Linschoten's day. The Jesuits were in charge at the time of which de Laval writes, and he considers them remarkably efficient. He says that the most common ailments were fevers, dysenteries, and venereal diseases. When the carracks arrived, great numbers of the crews, ill with scurvy and afflicted with ulcers, were removed to the hospital. (Pyrard de Laval, H. S., vol. ii, chap. i–viii.)

Tavernier wrote of conditions as they were about 1660, by which time the Dutch and English had encroached terribly upon the Portuguese commerce, with a consequent decline in the prosperity and magnificence of Goa. Tavernier tells us that in the good old days of Portuguese monopoly two or three ventures on voyages to the Moluccas or Japan, with a return of five to ten on the investment, were sufficient to make a man wealthy. Now, however, the Dutch had robbed them of so much trade that many of the Portuguese in Goa were impoverished. Very scornful are Tavernier's references to the "Hidalgoes of the Cape of Good Hope," the Portuguese of mean birth who prefixed the title of "Dom" to their names on rounding the Cape.

Tavernier describes the five governments into which Portuguese India was divided. The government of Mozambique, which included, apparently, all of the Portuguese forts and factories on the east coast of Africa, had been a rich sinecure in the former days. Our writer mentions one governor of this coast who after three years' tenure of office returned with ambergris worth 20,000 e'cus (450,000 to 660,000 dollars), besides gold and ivory. The government of Malacca was important because, as we have seen, all vessels returning from the East to Goa had to show the receipt of the Malacca customs house. The government of Ormuz had (by Tavernier's time Ormuz had been lost to the Portuguese) collected revenues on all of the commerce of the Persian Gulf, as well as on the pearl fisheries. The other governments were those of Ceylon and Muscat. The five governors were appointed by the Viceroy, and Tavernier considers that few monarchs have the distribution of such rich patronage as did the Viceroy of the Indies. Tavernier describes at length the many tropical fruits to be had in Goa, and adds: "Certainly a good pippin is worth more than all of these." May it not be supposed that in the midst of the luxuries of Goa the heart of the traveller yearned for "*La belle France*"? (Jean Baptiste Tavernier, "Travels in India," translated by V. Ball, i, chap. xiii.)

(*To be continued.*)

SCIENTIFIC SECTION

DISCOVERY OF THE ALKALOIDAL AFFINITIES OF HYDROUS ALUMINUM SILICATE.*

BY JOHN URI LLOYD, PHAR.M.

In the discursive paper following, which has, of necessity, been written in the first person, I have attempted to answer many questions that have been continuously asked of me during the past two years. I have also aimed to record many incidents, seemingly irrelevant, but which seem to me of sufficient interest to be authoritatively established. The usual exasperating scarcity of authoritative records in the direction of the early history of long-established drugs and remedial agents, leads me to feel that not alone in the present, but in the future, some one may desire to obtain the details embraced in the following narrative account.

History.—In the winter of 1910, calling to my experimental laboratory Mr. Wm. J. Miller, foreman of the technical laboratory that takes my special care, I said:

"Make a mixture of five parts berberine sulphate, with ninety-five parts fullers' earth. Bring it to a putty-like condition with water, working it well in a Wedgwood mortar to a complete and thorough admixture, then dry the product, powder it, and bring me a sample."

Within a reasonable time, a powder having the bright yellow color of berberine was brought to my desk. It was practically odorless, and seemed to be an intimately incorporated mixture of the two substances. Placing some of it upon my tongue, I found it tasteless! Sending for Mr. Miller, I asked:

"Are you sure that this mixture is as I directed, sulphate of berberine and fullers' earth only?"

"Exactly as directed," he replied.

Taking a small amount of the mixture, I digested it with diluted sulphuric acid, and filtered it. The filtrate was colorless, and gave no alkaloidal reaction. The residue on the filter paper retained its full berberine yellow color, but was tasteless.

"Send for a sample of the berberine sulphate used in the mixture." It came, and I found it to be true to name.

"Send for a sample of the fullers' earth used." It also came, and then I took the subject in hand.[1]

I made a mixture of berberine sulphate and fullers' earth, in the proportions aforenamed, added the same to distilled water, agitated the mixture well, and filtered. Behold! the filtrate passed colorless and devoid of alkaloid. I placed some of the residue upon the filter paper, on my tongue. It was tasteless. This mixture likewise, when digested with diluted acid and filtered, gave no evidence of an alkaloid being present.

Next I took, successively, other alkaloidal salts, such as those of morphine, quinine, cocaine, etc., submitted them to the same manipulation, and found that *all alkaloids experimented with* produced insoluble compounds, and that all (brucine excepted) were practically tasteless. I also discovered that the reaction was nearly instantaneous.

---

* Read before Scientific Section, A. Ph. A., San Francisco Meeting, 1916.

[1] Readers of this communication may recall the experiment made in 1885 by Professor Thomas H. Norton, who, at my suggestion, studied the combinations that could be made between hydrastine and calcium. These, however, were altogether different from the compounds now under discussion.

Search of Literature.—I now turned to literature on the subject of alkaloidal reagents, for I had no recollection of this material being applied to alkaloidal manipulation. The shelves of the Lloyd Library gave me no references. Nor could any authorities I consulted give me any information in this direction. I accepted, therefore, that this phase of the problem was new.

Search for the Active Constituent.—I next attempted to establish the constituent of fullers' earth that produced this phenomenon.[2] Naturally, I thought of the possible influence of organic contaminations. To establish this point, I digested fullers' earth with nitric acid, and afterwards washed the residue with water. It carried the full alkaloidal qualities of the original material, even when the nitric acid was heated in contact with the fullers' earth. Other methods and agents (such as sulphuric acid), that would have destroyed any organic structures, gave like results.

I next removed all possible amounts of iron, by the oxidizing action of nitro-hydrochloric acid, and subsequent washings with diluted hydrochloric acid. The residue retained its alkaloidal affinities. Digestion with dilute acids to the total removal of calcium and magnesium carbonates and salts, left the product active.

Next, a portion of the fullers' earth was heated in a crucible, until all the water of combination was expelled. The brick-dust red residue had no alkaloidal affinities whatever! The same paralysis of alkaloidal affinity occurred with calcined specimens free from iron and organic contaminations. All these observations were subsequently confirmed in a short paper[3] by Dr. Sigmund Waldbott, of the Ohio Mechanics' Institute, Cincinnati, Ohio. Heating the material to about 130° did not destroy its peculiar activity, but red heat expelled an additional quantity of water, rendering the reagent inert. I therefore accepted that the alkaloidal affinities did not depend upon either organic structures, iron compounds, adhering calcium or magnesium salts, or water-free aluminum silicate. The reaction was, unquestionably, a function of *hydrous* aluminum silicate.

Physical Condition of the Reagent.—The *physical* form of the reagent was next investigated. It was found that clay free from the "soapy" or "sticky" qualities, as commonly expressed, was likely to run very low in alkaloidal attraction. On the other hand, the sticky, blue clay of the hills of our neighborhood was but slightly active, and this rule was therefore not inflexible. Dr. Waldbott (previously quoted) states as follows:

> The thought suggested itself that water-deposited clay might show the same action; indeed it was found by the writer last summer, that the fine blue clay so abundant in the hills of Cincinnati, after treatment with hydrochloric acid, had the same effect upon alkaloidal salts, rather faintly, as may be expected, yet very distinctly.
>
> Thirty grammes of dry fullers' earth, capable of taking up 3¾ grammes of quinine bisulphate, slowly stirred into 240 grammes of sulphuric acid, resulted in an immediate increase of temperature, due, unquestionably, to the abstraction of water from the hydrous aluminum silicate. The mixture was digested for an hour on a water-bath, cooled, and poured into a gallon of water. The subsided

[2] Literature consulted gave me little information concerning the exact composition (physical included) of the material known as "fullers' earth." Subsequent experiences have taught me that this is readily explained by the fact that the term "fullers' earth" is a blanket name, covering a multitude of different earth substances, of widely different composition. See Table IV.

[3] Journal of the American Chemical Society, June, 1913.

precipitate took up 2½ grammes of quinine bisulphate. This demonstrated that even a great excess of sulphuric acid did not, by abstraction of water, destroy the alkaloidal affinity of the earth.

Inasmuch as natural fullers' earths are inclined to a slight acid reaction,[4] I attempted to neutralize the acid by alkalies, in order to see if the product could thus be paralyzed. A portion of the reagent was digested for twenty-four hours with dilute ammonia water, then collected on a filter, dried and powdered. It proved to carry its full alkaloidal adhesiveness, thus showing that the neutralization of free acid, if any were in the reagent, did not destroy the alkaloidal attraction. Experimentation teaches me that hydrous aluminum silicate, natural, may be white, practically free from iron compounds and natural dirt, and of a slight alkaline reaction. Professor Virgil Coblentz, to whom such a specimen was submitted, makes the following report:

Upon testing the reaction of your sample, I find it to be alkaline to phenolphthalein, iodeosine, Congo-red, and methyl orange.

Different samples of fullers' earth, foreign and domestic, were found to vary markedly in both structural composition and in alkaloidal affinities, and it was shown that these alkaloidal affinities were not dependent upon an exact chemical composition, or the acid qualities of the earth.

An attempt was next made to separate from fullers' earth, by chemical processes, the hydrously active agent, if the activity be from hydration alone, but with indifferent success. I had now accepted that the alkaloidal affinity depended upon the *physical* form, which in turn rested upon, and was closely connected with, the *hydrated* condition of the material. I had also determined to my satisfaction, at that date, that successive degrees of hydration made the aluminum silicate increasingly active, and I also became, somewhat reluctantly, tinctured with the thought that the alkaloidal affinity depended upon the *condition of the water of adhesion, or hydration (possibly both)*, and was distinct from that of water of definite combination, or crystallization.

Artificial Colloids Not Active.—Thus I was led to attempt to make artificially hydrated aluminum silicate, silicic acid, as well as gelatinous alumina and silica. For this purpose I used such processes as are employed for the preparation of hydrous alumina by the reaction between sulphate of aluminum and sodium carbonate. These products, however, whether made by cold or hot water, carried but feeble alkaloidal affinities, although the cold water product was typically gelatinous. Likewise, compounds precipitated as gelatinous forms from sodium silicate, by acids, proved to be practically inert. Then I reluctantly returned to the original, impure, natural material (fullers' earth), accepting that it carried a peculiar colloidal structure, embracing alumina, silica and water, which, in its native form, possessed the qualities of an alkaloidal precipitant.

Standardizing the Reagent.—Turning to the original material, fullers' earth, I now attempted through physical processes to separate, in its greatest degree of

[4] Fullers' Earth, by Charles L. Parsons: "The shades of color of fullers' earth are fully as great as those of other kinds of clay. Most of the earths on the market are light brown, gray, buff, or cream color, and a few are almost white. All fullers' earths which have been found valuable for bleaching purposes show a distinct so-called acid reaction. If a sample is touched to neutral litmus paper the paper will turn red; if the clay is suspended in water and phenolphthalein is added, a quantity of alkali, which varies widely with different earths, can be added before the red color appears. This property is no indication of true acidity, for the earth contains no acid."

purity, the substance, whatever it might be, that produced the alkaloidal reaction.[5]

Admixture with much water established that a certain part of the fullers' earth quickly settled, whereas another part slowly separated from the water solution. Decanting the overlying water and again adding water established that, in the second washing, a longer time was required for the subsidence of this overlying, gelatinous float. Again decanting the water and adding fresh water was followed by a further retardation (suspension) of the overlying light precipitate, until finally it was discovered that a colloidal, overlying material formed, as a translucent mud or gelatinous float, over the part that quickly settled. This colloidal fluid could be decanted as a liquid, and then allowed, by long time, to settle, separating it, thus, quite free from the heavier body.[6] It was gelatinous and, when collected on a strainer and dried, it formed a tough, hard, colloidal stone that, on being powdered, was found to possess, as contrasted with the original earth, markedly *increased* alkaloidal affinities.

It may be stated that some of the natural forms of hydrous aluminum silicate, mixed with water and agitated occasionally for some days and then permitted to rest, resolve themselves into different structural layers that subside, strata-like, the topmost layer being surmounted by a milky liquid that approaches a colloidal solution. The topmost layer of this sediment is a slime, resembling protoplasm, and is indeed nearly a fluid. Over this rests the milky liquid aforenamed, which is in turn a series of zone-compounds that, on filtration, are found to consist of a colloidal substance, part of which is so attenuated as to pass freely through the filter paper,[7] leaving on the filter a gelatinous, jelly-like material. This jelly reminds one of what the entomologist now calls "plankton," the invisible and transparent organizations that are found, suspended, in all natural waters, and that serve as the long-mysterious food of minnows.

From a fullers' earth, fifteen parts of which are capable of precipitating one part of quinine bisulphate, an increased alkaloidal affinity was thus made possible, only *eight* parts being required to precipitate one part quinine bisulphate. This improvement in quality of the dried colloid from ordinary fullers' earth, being sufficiently energetic, as well as feasible in practical manipulation, was taken as a preliminary standard, and this standard is yet retained, although, by the process to be next named, the alkaloidal affinity of the material can be increased much beyond this point.

Second Process.—In the early course of my experiments it was demonstrated that, with the quality of earth used, with each manipulation of an alkaloid, the colorless wash-water contained a substance that, on evaporation, would crystallize colorless and permanent, if the alkaloidal salt were a sulphate; but that it was hygroscopic if the alkaloidal salt were a chloride. For example, sulphate of morphine and sulphate of quinine, each, on evaporating the washings, furnished a crop of permanent, colorless crystals, whereas the chlorides of these alkaloids furnished a hygroscopic salt. Reasoning from this, I concluded that each

[5] That this reaction was due to a something in the fullers' earth not yet understood was evidenced by the fact that no two qualities of fullers' earth were identical in their alkaloidal adsorption qualities, some possessing this in a marked degree, while others were very feeble, as shown by Table IV.

[6] The successive washings depleted the substance of its inherent soluble salts, which have a tendency to granulate gelatinous hydrates.

[7] I have not as yet applied the ultra-microscope to this filtrate. In my opinion, it will be shown to carry dispersed colloids, and it may prove to be a very sensitive reagent in alkaloidal research.

alkaloidal manipulation threw out extraneous earths, in the form of sulphates and chlorides of calcium (and possibly aluminum), from the fullers' earth, this indeed proving to be a fact. Dr. Waldbott demonstrated that the reagent had the power of even liberating free sulphuric acid, where no magnesium or calcium carbonates were present.[8]

My endeavor at this period was, however, not to determine the nature of the *side* products, but to increase the alkaloidal affinities of the hydrous aluminum silicate, by the successive alkaloidal recombinations and exhaustions that successively threw out portions of the earth compound. Table I gives an experiment with this object, and illustrates that 8½ grammes of the standardized reagent, having qualities capable of precipitating 1 gramme of quinine bisulphate, continuously decreased in weight by the repeated use of 0.5 gramme quinine bisulphate, and yet carried its revivified alkaloidal adhesive qualities through twelve manipulations, the final result showing that 3.2 grammes of this successively refined reagent were, as regards alkaloidal adsorption quality, as active as the entire amount first employed.[9]

Process.—One gramme of quinine bisulphate was dissolved in 80 Cc. water, to which was added 8.5 Lloyd's reagent (*purified, colloidal, hydrous aluminum silicate*). The mixture was well shaken and filtered, the filtrate showing no alkaloidal reaction with Mayer's test. The precipitate was washed with water, the total aqueous washings being evaporated to dryness, yielding colorless, non-alkaloidal crystals (mainly calcium sulphate). The alkaloidal precipitate on the filter was dried, powdered, and extracted by successive treatments with ammoniacal chloroform (100 Cc., in fractions, for each experiment), until the alkaloid had been practically eliminated. The exhausted reagent was then dried and powdered. It weighed 7.5 grammes. This was used as the material for subsequent manipulations, the foregoing process being eleven times repeated, making twelve manipulations in all. As noted before, after the first exhaustion of the alkaloid, but 0.5 gramme of quinine bisulphate [9] was employed.

TABLE I.

Amount of reagent employed.			Quinine bisulphate employed.			Dried residue.	
8.5	Gm.	plus	1.0	Gm.	gave	7.5	Gm.
7.5	Gm.	plus	0.5	Gm.	gave	6.7	Gm.
6.7	Gm.	plus	0.5	Gm.	gave	6.2	Gm.
6.2	Gm.	plus	0.5	Gm.	gave	5.5	Gm.
5.5	Gm.	plus	0.5	Gm.	gave	5.5	Gm.
5.5	Gm.	plus	0.5	Gm.	gave	5.0	Gm.
5.0	Gm.	plus	0.5	Gm.	gave	4.7	Gm.
4.7	Gm.	plus	0.5	Gm.	gave	4.7	Gm.
4.7	Gm.	plus	0.5	Gm.	gave	4.1	Gm.
4.1	Gm.	plus	0.5	Gm.	gave	4.0	Gm.
4.0	Gm.	plus	0.5	Gm.	gave	3.7	Gm.
3.7	Gm.	plus	0.5	Gm.	gave	3.2	Gm.

[8] Science, July 3, 1914, p. 35.

[9] A question here arises as to whether this increase is due, altogether, to the exclusion of inert constituents of natural fullers' earth. I do not, in these preliminary remarks, exclude the supposition that there may be also a *molecular* change, which increases the affinity of the residue after the alkaloid is separated, by the aforenamed successive steps. In fact, I am now aiming to give only experiments made in the passing along, to the exclusion of theories. The 0.5 gramme was selected because the chloroformic washings were not sufficient to remove the total 1.0 gramme first employed, which was as much as the reagent could hold.

From this table it will be observed that there was a steady, but not regular, decrease in the weight of the reagent. It will also be observed that there is much unevenness in the proportion of the dried residue. This can be accounted for by the occlusion of uncertain amounts of water of attraction, not evenly dissipated in the drying; by incomplete washing of some of the precipitates in the successive stages; and by uneven extractions of the alkaloid, as well as by error of manipulation. But this experiment was not intended to be precise in details, or other than a general one, its object being to discover whether or not the reagent decreased in weight during successive manipulations, the trend of the decrease, if any, and also whether the revived reagent resumed its alkaloidal activity after being depleted of alkaloid. This was satisfactorily accomplished, 6.5 Gm. alkaloid having worked 8.5 Gm. of the reagent, which in the manipulation was reduced to 3.2 Gm. The experiment was not repeated to ensure mathematical exactness, this problem being left for those concerned in scientific exactness.[10] I had established that for twelve successive combinations and depletions, the dispossessed natural reagent resumed its alkaloidal vitality, and that, with each experiment, a colorless, inorganic salt was eliminated.[11]

Samples Distributed.—Venturing now to assume that the problem of hydrous aluminum silicate in its relation to alkaloids was of sufficient interest to warrant me in bringing it before the scientific world, I made a considerable supply of the dried and powdered colloidal structure, and placed it, together with stony slabs of the same material and the process by which it was obtained, in the hands of a number of chemists, presumably interested in these directions. None of these parties had ever experienced, or heard of, the alkaloidal affinity of this material, but they received my statements concerning it, most cordially. The fact of an insoluble, therapeutically inactive reagent, that held its alkaloid in the presence of an acid and liberated it in alkaline contact, seemed impossible, but when tested it led to the evolution of a multitude of theoretical possibilities, both technical and therapeutic.

At an early date, as has been stated, Dr. Sigmund Waldbott, of the Ohio Mechanics' Institute, Cincinnati, became interested in the manipulation, as observed by him in my laboratory experimental work. Likewise, Dr. M. I. Wilbert, of Washington, D. C., Dr. H. W. Felter, of Cincinnati, Dr. H. M. Gordin, of Chicago, and Dr. Bernard Fantus, of Chicago, to all of whom I brought the subject, undertook special lines of questioning investigations[12] that lay within their particular provinces. It is not proper for me to print private statements, but I can refer to two public papers that resulted, one by Drs. Gordin and Kaplan, the other by Dr. Bernard Fantus.

Investigations of Drs. Gordin and Kaplan.—Among others to whom specimens of the reagent were forwarded, together with data giving its origin and method of

[10] Dr. Waldbott's attention was called to this table and to this phase of the problem, at an early date, and he began a series of careful investigations to determine various problems suggested, as well as to establish the composition of the excluded inorganic salt. Dr. H. M. Gordin was also interested in this phase of the investigation, but by reason of the fact that it had been undertaken by Dr. Waldbott, did not, so far as I know, enter into the problem.

[11] On a manufacturing scale, I now use the revived reagent repeatedly, for subsequent batches of the same drug, with as yet no noticeable decrease in affinity. My percolators run, with such drugs as gelsemium and lobelia, from one thousand to two thousand pounds.

[12] I have aimed, in this paper, to avoid intruding on any scientific problem that I know is being investigated by anyone. My aim is to introduce just enough research, or exploration details, to make plain the manner in which the opening problems were met.

preparation, was Dr. H. M. Gordin, of the School of Pharmacy, Northwestern University, Chicago, Illinois. From his very cordial reply (January 15, 1913) I extract one sentence, as follows: " Personally, I would be glad to go more deeply into the subject, and publish the results of my investigations." Much pleased, I supplied Dr. Gordin with an abundance of the reagent aforenamed, together with the process of manipulation, and all I knew concerning its general qualities. His first paper (Gordin and Kaplan), presented at the meeting of the American Pharmaceutical Association in Nashville, 1913, was mainly a study of the adhesive qualities of the reagent, in contrast with other adhesive substances, such as animal charcoal. This paper, printed in full in the JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, 1913, was the first that had been issued in detail concerning the subject. Being widely read and distributed, it called the attention of the chemists of the world to the phenomena connected with hydrous aluminum silicate. It was shown therein that both the rapidity and completeness of the extraction of alkaloids from aqueous solutions by means of " Lloyd's reagent " far excelled that of other " adsorbers," being, in many instances, almost instantaneous.

Continuing their investigations, Drs. Gordin and Kaplan contributed to the American Pharmaceutical Association, at its Detroit meeting, a report of an attempt to separate the alkaloids morphine and strychnine from their respective combinations (JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, December, 1914). In this, the difficulty in separating the total amount of the alkaloid by the process employed debarred analytical exactness, but reference was made to the fact that Dr. Hugh McGuigan had demonstrated that, in the living digestive apparatus, the union of the alkaloid strychnine and the reagent is readily disrupted, the action of the strychnine resulting. These physiological investigations by Drs. Felter, Gordin and Kaplan, and McGuigan have been given wide publicity.

Disappointment.—My first hope, seemingly well founded, after establishing the energy of this reagent in the presence of acids, was that by the administration of either highly colloidal fullers' earth, or a standardized, colloidal, hydrous aluminum silicate, the professional and scientific world would be able to antidote the action of any alkaloidal poison through its means, and that the reagent would thus prove a great boon to humanity.[13] I hoped that the reagent would grasp an alkaloid in the stomach and hold it to final elimination, thus preventing its assimilation. In order to determine this phase of the subject, Dr. H. W. Felter, Cincinnati, in 1911 made for me a physiological experiment, the record of which is as follows:[14]

TABLE II.

Report by Professor H. W. Felter, M.D.

Cincinnati, December 27, 1911.

9.15 A.M. Administered to small dog, one year old, weighing 30 pounds, ¾ of one powder (1½ to 1¾ grains strychnine sulphate).
9.23 A.M. No appreciable effects; followed at
9.24 A.M. By tremulous whining; dog very alert; locomotion good.
9.31 A.M. Locomotion slightly impaired; great uneasiness.
9.32 A.M. Lay down as if very tired; got up in half minute, still whining.
9.33 A.M. Gets on haunches frequently, and is very restless (or rather uneasy).

[13] See Eclectic Medical Journal, Cincinnati, October, 1913, pp. 540–542.

[14] My mind naturally reverted to the " Clay Eaters " of the South, concerning whom I have been attempting to collect evidence, together with specimens of the clay thus employed. The result may yet be useful.

9.34 A.M. Locomotion is impaired in hind quarters, with contracted appearance; gets up and lies down at intervals of fifteen seconds.
9.35 A.M. *First convulsive start;* in half minute, another.
9.36 A.M. Convulsive starts frequent.
9.37 A.M. Ataxic or incoördinate gait.
9.38 A.M. Paralysis of hind quarters.
9.39 A.M. Sudden convulsive start, with tremors.
9.40 A.M. *First general convulsion,* in three convulsive movements.
9.41 A.M. While still in tetanic convulsion, administered a very little chloroform; but dog was dead before this could act.

(Signed) H. W. FELTER, M.D.

Next, Dr. Bernard Fantus made a like investigation, concerning which he reports as follows:

TABLE III.

Report by Dr. Bernard Fantus, Chicago, Ill.

Chicago, August 1, 1913.

10.30 A.M. Female dog, weighing 25 pounds, whose stomach was empty, was given by stomach tube 25 grains of alcresta strychnine sulphate (6 percent), representing 1½ grains strychnine sulphate (1.167 grains strychnine).
10.45 A.M. Up to this time animal was resting quietly.
10.46 A.M. Got up and walked; hind legs rigid. Animal is now restless, gets up and lies down, hind limbs rigid, until
11.00 A.M. Mild convulsion occurs.
11.01 A.M. Violent convulsion.
11.03 A.M. Violent convulsion.
11.06 A.M. to 11.10. Animal standing; limbs stiff; occasional convulsive starts; frequently rubs its nose against floor of cage.
11.10 A.M. to 11.13. Walking about; front as well as hind legs rigid.
11.14 A.M. Convulsion, more violent than any preceding, lasting several minutes, leaving animal prostrated, with gasping and irregular respirations, frequent convulsive starts and tremors.
11.34 A.M. Convulsive starts becoming more severe.
11.36 A.M. Violent and prolonged convulsion.
11.38 A.M. Another severe and prolonged convulsion.
11.40 A.M. Death.

(Signed) BERNARD FANTUS, M.D.

As already stated by Dr. Gordin, Dr. McGuigan (whose detailed report I have not received) had also established that the strychnine combination possessed, in alkaline contact, its lethal strychnine qualities, the difference between its action and that of the alkaloid alone seeming to be a more or less prolonged influence, before death resulted.

Dr. Fantus's Investigations.—Dr. Bernard Fantus, who is much interested in the subject of pleasant medicines, has recently published a work titled, "Candy Medication."[15] He naturally became concerned in these alkaloidal compounds because, while tasteless, or nearly so, they are yet therapeutically effective. In the year 1912 he obtained from me supplies of different alkaloidal combinations from which, even with strychnine, he made candies that were free from bitterness, his report being contributed to the American Pharmaceutical Association, Nashville, 1913. In 1915,[16] he contributed another and very valuable article, entitled "Fullers'

[15] Candy Medication, C. V. Mosby Company, St. Louis, 1915.
[16] Journal of the American Medical Association, May 29, 1915.

Earth," on the antidotal value of hydrous aluminum silicate as found in fullers' earth, exemplifying the same with many studies concerning outreaches of the subject, together with a table giving adsorption values of different earths. His table on fullers' earth agrees with my experiences,[17] so far as demonstrating the uncertainty of fullers' earth in alkaloidal manipulation is concerned.

Other Opportunities.—Deeply disappointed in my hope that the reagent would prove to be an antidote in the direction of alkaloidal poisons, I was next led to a consideration of the practical utilization of the discovery for technical purposes. In this direction I had not given the compound any consideration whatever. However, Dr. Wilbert, who visited my laboratory in December, 1911, and Professor A. B. Stevens, of Ann Arbor, who also visited me in August, 1912, were both much interested in its varied problematical outreaches, including its possible practical applications. Each of these gentlemen foresaw clearly that a substance capable of holding an alkaloid intact in the presence of an acid, and of liberating it in the presence of an alkali, might possess advantages in therapeutic directions heretofore unattainable. Dr. Wilbert studied the report of Professor Felter, concerning the experiment just made by him (see Table II), and decided that the strychnine did not commence to exert itself until it passed into the alkaline secretions of the bowels, where it was dissociated from the reagent.[18] In March, 1913, I took the reagent, together with a number of alkaloids, to Washington, and inviting Dr. Lyman Kebler and Dr. H. W. Wiley to my room in the Raleigh Hotel, I illustrated for them its qualities with a line of experiments.[19] I now recall that, during the discussion following, Dr. Wiley referred to the fact that a physician had once come to Washington, enthusiastically advocating the use of fullers' earth as a local application for diphtheritic throat tissues. Some time afterward a private demonstration was made at the Hygienic Laboratory, Washington.

First Public Announcement.—In May, 1913, in a paper read before the Pennsylvania Pharmaceutical Association, Dr. M. I. Wilbert, of Washington, made the first public announcement in a pharmaceutical direction, following which came a communication by Dr. Sigmund Waldbott to the Journal of the American Chemical Society, June, 1913. The first detailed presentation of the adhesion phase of the reagent was made at the meeting of the American Pharmaceutical Association, Nashville, August, 1913, by Dr. H. M. Gordin, of Chicago, and at the same meeting Dr. Bernard Fantus, of Chicago, presented a paper that first introduced the compounds of the reagent in pleasant medication. The first public demonstration of the material and its activities before a body of scientists was made April 8, 1914, at the University of Cincinnati, at the General Meeting of the American Chemical Society. Each step in the precipitation of alkaloids by this reagent was there demonstrated with the able coöperation of my young assistant, Miss Eda

[17] Table IV.

[18] I am not in a position to do justice to these compounds in a commercial sense. I am intensely interested in research directions that concern plant problems, and this work would necessarily have been disturbed, or perhaps even abandoned, had I taken upon myself the making and distributing of a new line of medicaments. Therefore arrangements were made with my friend, Mr. J. K. Lilly, in accordance with which the commercial problem was transferred to the establishment of Eli Lilly & Company, Indianapolis. In this arrangement I am much gratified and consider myself very fortunate.

[19] As yet I had made no printed reference to this subject, which was, indeed, but one phase of my laboratory research, and which, until this date, had seemed to me to need no conspicuity.

Van Guelpen, to the satisfaction of the audience. This demonstration was prefaced with a brief paper by Dr. Sigmund Waldbott, who made known the liberation of free sulphuric acid from quinine bisulphate by means of Lloyd's reagent, previously freed from its calcium content.[20]

Concerning Hydrous Aluminum Silicate.[21]—This historical sketch would be incomplete without some reference to the substance, hydrous aluminum silicate, itself. It will be noted that the standard established as being readily attainable was that of a powder capable of precipitating one gramme quinine bisulphate, by means of eight grammes of hydrous aluminum silicate. All my inquiries for references proving futile, for the reason that literature was absolutely devoid of any reference to the use of this material as an alkaloidal precipitant, a series of studies of the alkaloidal adhesion phases of various clays became necessary, with the object of obtaining a satisfactory commercial source. This search demonstrated that no two specimens seemed to possess the same alkaloidal affinity (see Table IV). Chemical methods did not avail to establish a standard, while lixiviation produced, from the same earth, various products of discordant alkaloidal affinities. Standardization proved thus to be most perplexing. Some clays that seemingly should have classed high ran very low; whilst others less promising were decidedly active. After an exhaustive study of many native American fullers' earths, as well as from England [22] and Japan, together with two Turkish clays that Mrs. Lloyd had found in use among the Turkish ladies for washing the hair, I determined to my own satisfaction that the degree of alkaloidal affinity depended upon an undetermined, but yet hydrous, *colloidal* condition of the silicate, which, under other forms, may be devoid of alkaloidal affinity. Whilst engaged in this very perplexing but most interesting study, Dr. Charles L. Parsons,[23] of the Department of the Interior, Washington, issued his bulletin [24] on fullers' earth, carrying the most comprehensive study of the subject I have yet obtained. This bulletin, however, is mainly technical, and being devoted to the use of fuller's earth as a clarifying agent with oils and as a decolorizer, it carries no reference to its alkaloidal affinities. However, a personal visit from Dr. Parsons led to the placing in my hands of a very complete line of American fullers' earths, from which I determined the alkaloidal affinities of all the specimens. These, tabulated as follows, exhibit the great unevenness of natural fullers' earths, the standard for comparison being "Lloyd's reagent," *eight grammes of which* are capable of taking up one gramme of quinine bisulphate.

[20] These personal references are designed simply to establish, chronologically, the various contributions that were early made in this direction. They also enable me to express my thanks and obligation to the various friends herein named, whose encouragement was much needed, and who have my most grateful thanks. For years I had refrained from appearing publicly in connection with this problem, so many phases of which were, and still are, to me so mysterious.

[21] This material, as supplied by Eli Lilly & Company, is now known as "Lloyd's Reagent."

[22] English earths run better than most others, but are very dark and much contaminated with foreign materials that are difficult to eliminate.

[23] Dr. Parsons discovered that an application of heat to redness did not altogether destroy the decolorizing qualities of the earth. I have as yet, however, found no specimen in which the elimination of all its water by the act of calcination does not at the same time annihilate the alkaloidal attraction.

[24] Bulletin No. 71 Mineral Technology 3, Department of the Interior. Fullers' Earth, by Charles L. Parsons, 1913.

(*To be continued.*)

CONTRIBUTED AND SELECTED

AERIAL OR GASEOUS DISINFECTION.*

BY SEWARD W. WILLIAMS, PH.C., F.C.S.†

CONDITIONS IN ARIZONA AND MINNESOTA COMPARED.

As to "proper conditions," probably nowhere are conditions for natural disinfection as nearly ideal as in Arizona and New Mexico.

The following comparison of relative humidity and percentage of sunshine, as found respectively in St. Paul and Phœnix, was supplied by the United States Weather Bureau:

RELATIVE HUMIDITY, PERCENT.

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
St. Paul, Minn.:													
7 A.M.	83	84	80	74	74	78	79	83	83	80	80	83	80
7 P.M.	75	74	66	54	52	56	54	56	60	62	69	75	63
Phœnix, Ariz.:													
6 A.M.	68	65	59	48	39	33	51	59	52	53	62	66	54
6 P.M.	39	34	29	20	15	13	23	27	25	28	37	38	28

PERCENTAGE OF POSSIBLE SUNSHINE.

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
St. Paul, Minn.:	50	62	62	63	59	66	75	70	62	58	48	44	60
Phœnix, Ariz.:	73	78	78	87	91	93	83	82	88	88	83	80	84

It is interesting to note that, while Arizona has far more sunshine and much less humidity than Minnesota, the State Health Officer of Arizona says in answer to number 7: "It is not safe to rely entirely on fresh air and sunlight." And the State Health Officer of New Mexico says: "Very unwise [to rely on natural conditions]; use all precautions, but at the same time fumigate the best we know how."

Surely if conditions are not "proper" in these two states we cannot expect them to be so anywhere.

The following letter from Assistant Surgeon General J. W. Trask, under date of July 20th, will be of interest in this connection:

> Your letter of the 10th instant, addressed to the Weather Bureau, has been referred to this office because of the contained inquiry regarding the "natural aids and hindrances, in combating pathogenic bacteria," in Arizona and Minnesota.
>
> In Arizona the amount of sunshine is very great and the air is exceedingly dry, so that the outdoor conditions in Arizona will quickly destroy most pathogenic organisms, if these organisms are exposed to the sunlight and air. However, these conditions will not

* Read before Chicago Branch of the American Pharmaceutical Association, November 16, 1915. Continued from page 285, March issue.

† Director, Scientific Department, Bauer & Black, Chicago.

directly affect pathogenic bacteria located within the body of a person. The extent to which they will combat such bacteria inside a house depends upon the conditions within the house, the windows, and whether they are kept open or closed.

In Minnesota the air within a steam heated house or hot-air heated house will be as dry in the winter time when the furnace is in operation as the air in Arizona unless unusual precautions are taken to add moisture to the air. While the dry air in such heated houses, and this applies to most all furnace heated houses in northern climates, is destructive to pathogenic bacteria exposed to the air, it is not destructive to such organisms within the bodies of the inmates of the houses and, moreover, it is detrimental to the health of the inmates themselves.

By direction of the Surgeon General.

Respectfully,
J. W. TRASK,
Assistant Surgeon General.

THE LOGIC OF GASEOUS DISINFECTION.

Dr. M. J. Rosenau, in his standard work on "Disinfection and Disinfectants" (1902), says:

A gas is the ideal weapon for destroying such an invisible foe as the infection of the communicable diseases, but the ideal gas for this purpose is still to be discovered. By reaching all portions of a room or confined space it lessens the risk of overlooking any surface upon which the infective agent may be lodged. Germicidal solutions are difficult to apply to all the surfaces of an ordinary living room, and it is furthermore difficult to hold the solution in contact with the ceiling, walls and other surfaces a sufficient length of time in order to obtain the certain action of the substance.

There is practically only one gas suitable for general application—viz., formaldehyde. This substance comes nearer being an ideal disinfectant than any of the gases so far exploited. It is not poisonous, does not injure fabrics, colors, metals, or objects of art and value.

He goes on to explain that formaldehyde has distinct limitations, and makes it clear that, while superior as a germicide in warm, moist air, it is not an insectide.

Dry sulphur dioxide is the right gas to use for killing insects and vermin.

In his work on "Preventive Medicine" (1913), the same authority says:

We now know that fomites play a comparatively minor rôle in the transmission of disease. The disinfection of rooms and objects does not now, therefore, hold the importance in the minds of sanitarians that it once did. However, if terminal disinfection prevents the occurrence of only a small number of cases it would still seem to be worth while. Moreover, what health officer would willingly allow his child to occupy the bed or handle the objects in a room soon after a case of typhoid, scarlet fever, tuberculosis, or diphtheria, without first applying some effective method of purification? So long as we possess such a reasonably efficient and satisfactory substance as formaldehyde, terminal disinfection should be practised after all diseases in which the environment may become infected, even though the danger be slight.

The germicidal power of formaldehyde is credited very largely to its property of combining directly with the albuminoids constituting the protoplasm of bacteria.

While it may be true that disinfecting gas does not penetrate far into heavy fabrics, cushions, etc., it is also true that most of the infection in a room is on the surface of things. Evidence has been advanced that, with the minimum amount ever authorized, formaldehyde gas at least penetrates a paper envelope, killing the test organisms within four hours.

Dr. Rosenau says (p. 91, "Disinfection and Disinfectants"): "Bacteria exposed directly to the action of a concentrated volume of the [formaldehyde]

gas are destroyed almost instantly. Under similar conditions spores are sometimes killed within one hour. But in practical work it is necessary to prolong the time of exposure because the gas is evolved slowly from most forms of apparatus, and it takes considerable time for it to penetrate to all the corners and dead spaces of a room."

It may be noted here that the specific gravity of formaldehyde gas is so near that of air that diffusion through the room is readily facilitated if there is anything to start a circulation, as for example the hot air and gas rising from a fumigator in which heat is being used to drive off the gas; and the longer the lamp burns after the gas is driven off the longer will the effect on the circulation of air in the room continue.

THE IMPORTANCE OF DISINFECTION.

Francis Ramaley, Ph.D., and Clay E. Giffin, B.A., M.D. (Boulder, Colo.), in their work on "Prevention and Control of Disease" (1913), say:

> The germs of many diseases remain for a long time unaffected by exposure to the air. A room infected with diphtheria may be dangerous for many weeks after the recovery of the patient, unless disinfection has been carried out. Scarlet fever, smallpox, tuberculosis, and pneumonia may be taken by those exposed to infected air, even though the person having the disease be not in the room at the time. . . . Just as people may carry infectious material of disease in their clothing, so may it be carried in clothing which is shipped from the manufacturer to the dealer. . . . It is difficult to prove the extent of such distribution of disease, but it is highly probable that this means of starting an epidemic is more frequent than is usually supposed.

That Dr. Ramaley's ideas regarding the viability of pathogenic bacteria and the danger of fomites have recently undergone some change is evident from the following replies which he kindly made to the seven queries of the preceding pages:

1. I have come to believe that fumigation is of little importance in any case where the patient recovers and perhaps really unnecessary even when the patient dies or is removed during height of disease. In latter case *tuberculosis.*

2. Formaldehyde, it seems to me, is the best.

3. I believe that people (generally children) "catch" tuberculosis from others; that they do not get the disease from infected rooms.

4. I think there would be little necessity for such fumigation if the room were well aired and sunned.

5. I know of no case in which disease alleged to be due to fomites could be proved to have originated in such manner. Generally there was much more likelihood that a "carrier" or a light unrecognized case was the cause of infection.

6. Cannot answer for others. For myself, I recommend that school books be laid aside for a time; aired if possible. However, I doubt if even this is at all necessary.

7. I believe that the micro-organisms of disease, except those few that produce spores, lose all virulence soon after leaving the body of a patient. Hence, fumigation would seem to be unnecessary.

(Signed) FRANCIS RAMALEY.

B. L. Arms, M.D., Professor of Preventive Medicine, the University of Texas, Galveston, says in a recent letter:

> . . . . I am a firm believer in disinfection, but do not consider fumigation and disinfection synonymous terms. In 1910–11–12 we made in Boston a series of tests of the efficiency of fumigation and reached the conclusion that fumigation was not disinfection,

and is so often misleading to the public. A short paper on this was presented at the American Public Health Association at Washington in 1912. This was published in the American Journal of Public Health late in 1912. The fumigation of rooms tends to make the public believe that an inanimate object is at fault, overlooking what I consider to be a great factor, the personal carrier of diseases. The Journal of the Outdoor Life for October, which came this morning, has an interesting article on page 334 which bears out our contention. The conclusions of the New York Health Department are drawn only after very careful consideration and as a result of numerous practical tests.

In regard to the questionnaire I would answer the questions as follows:

(1) None. Disinfect instead. (2) All gases affect the surface only. They will not penetrate. I feel that the thorough airing out of the room after formaldehyde is one of the best results from its use. (3) ——— (4) Disinfection and renovation are better than fumigation. (5) I think that inanimate objects, other than those recently infected, play little part in the spread of disease. (6) In my opinion books play little part in the spread of infection. The patient affected with an acute infectious disease rarely handles books, and the drying action of the paper tends to kill any infection. It is also practically impossible to fumigate books, *i.e.*, to kill organisms in books. (7) Much more good will be accomplished by disinfection and renovation than by fumigation.

(Signed) B. L. Arms.

Dr. M. J. Rosenau, Harvard University Medical School, under date of July 2, 1915, writes:

It would not be possible for me to answer your questions concerning disinfection in the confines of a brief questionnaire. The necessity for disinfection, as well as the germicidal agents to be used, and the method of using the same, varies with the circumstances, and also with the disease. I am glad you are making a distinction between fumigation and disinfection. Those who claim that disinfection is not necessary after measles and certain other infections really mean that fumigation may be dispensed with.

(Signed) M. J. Rosenau.

The Saturday Evening Post for June 26, 1915, in an article unfavorable to fumigation, says:

The questions now are as to whether there is need for any disinfecting measures after most diseases, or whether more effective measures than the old fumigating operation should be taken. Undoubtedly there is sound reason for undertaking more vigorous disinfection. Paint, new wallpaper, fire, air, soap and boiling water are best able to take the enthusiasm out of any lurking germs.

In the report of the Michigan State Board of Health for August, 1915, p. 414, the following is credited to Prof. Edward D. Rich, State Sanitary Engineer: "Tuberculosis germs in shady places will retain life for days. Often germs are taken into the homes on the feet of pedestrians and in the homes the germs have been known to retain life for ten years."

In Section 159, p. 59, Sanitary Code of Louisiana (1911—latest obtainable from the Board, September, 1915), it is stated that "if, in spite of thorough disinfection and renovation, new cases should arise in a house that has been occupied by a consumptive, the premises may be condemned and destroyed by the State Board of Health whenever it seems advisable so to do."

Making allowances for varying dates, we still have a remarkable illustration of what Dr. Fulton on another page refers to as oscillation "extreme"—from the idea that disease germs do not live long enough outside the body to make it worth while bothering with them, to the conclusion that the only safe thing to do is to scrub, repaint, repaper, recalcimine or even burn the house down.

It's safe to say that the truth lies somewhere between these violent extremes,

and that to be on the safe side we should still fumigate and in such manner, of course, as to disinfect.

Charles V. Chapin, M.D., Sc.D., Superintendent of Health, Providence, R. I., abandoned fumigation some years ago chiefly because he "did not believe that the house and its contents were a factor of any moment in the spread of disease." But coincident with abandoning fumigation he did a great work in effecting a better control of "carriers"—apparently healthy people who harbor pathogenic organisms, and, unknown to themselves or others, spread contagion in crowded places.

To what extent inefficient fumigation has been compared with no fumigation at all may be open to question. Certainly his vital statistics were greatly improved by his eliminating in a large measure the "carriers" as a menace to public health. If, as a large majority of the sanitarians who contributed to the foregoing symposium think, gaseous formaldehyde disinfection is justified, we certainly should not abandon it because we now know that a considerable share of infection results from "carriers."

Infection should be fought both by making old methods of fumigation efficient means of disinfection, and by looking after carriers.

The replies of Dr. Harper (Health Officer of Wisconsin) and Dr. O'Connell (Health Officer, Port of New York), on preceding pages, for example, seem none too conservative in the matter of retaining the safeguard of efficient gaseous disinfection.

WILL FORMALDEHYDE GAS KILL THE BACILLUS OF TUBERCULOSIS? IT'S MAINLY A QUESTION OF HUMIDITY AND TEMPERATURE.

With one death from consumption every 2½ minutes in the United States*—23 every hour, 548 every day, 200,000 every year—the question raised by Dr. Hurty, of Indiana, in his reply to question number 4 assumes great importance. He says: "Formaldehyde disinfection is not efficient against tuberculosis infection." Just one other of our authorities says the same thing—Dr. Meader, of Albany.

I asked Dr. Meader on what he based his conclusion and he replied that his attention was first called to the matter by Dr. Hurty, and that he determined to experiment for himself.. He says: "I took tuberculous sputum, spread it out thinly on a glass slide and exposed it for twenty-four hours to the concentrated fumes of formaldehyde gas, after which I inoculated several guinea-pigs, and, much to my surprise, they all died in four weeks with characteristic lesions of tuberculosis in the inguinal lymph-nodes and spleen."

On page 151, "Practical Sanitation" (1914), by Doctors Gardner and Simonds, appears the following: "It was formerly thought impossible to kill the tubercle bacilli with formaldehyde, but if conditions are properly looked after, and the necessary amount of moisture is present, there is no trouble doing it. It is well to supplement the use of formaldehyde (which should last for at least six hours) with 2½ percent cresol solution, sprayed or mopped on."

The supplementary treatment is evidently to insure against failure due to conditions *not* being properly looked after.

It happens that Dr. Hurty wrote the introduction to this standard work. In it he says of the book: "Its teachings are true and to date, and it may be confidently stated that if its directions and lessons are heeded, the efficiency, wealth and happiness of the commonwealth will be greatly augmented."

Dr. Hurty is generally right, and all this does not prove that he is wrong in

* Average figures from Michigan Board of Health report, August, 1915, p. 380.

either of his apparently conflicting statements. As we shall see by the following evidence; his first statement is true if humidity and temperature are low, and the other true if humidity and temperature are relatively high.

On page 42 of Bulletin No. 42, Public Health and Marine-Hospital Service of the United States, Dr. Thomas B. McClintic says: "Upon the permanent vacation of the quarters occupied by a consumptive, whether through death, removal, or recovery, the room, and preferably the entire building, should be disinfected with formaldehyde gas, as described on page 9." (Formalin-permanganate method—10 ounces of formalin and five ounces permanganate, in a 10-quart pail, with air warm and humid, for 1000 cubic feet.)

The following letter from Assistant Surgeon General A. H. Glennan, under date of October 7, 1915, explains itself:

> The Bureau is in receipt of your letter of the 2nd instant inquiring as to the scientific basis of the statements in Public Health Bulletin No. 42 relating to the use of formaldehyde gas for the disinfection of premises vacated by consumptives.
>
> As suggested by you, the author did not take for granted his conclusions, but based these on the experiments described in Hygienic Laboratory Bulletin No. 27 entitled "The Limitations of Formaldehyde Gas as a Disinfectant." While these experiments tend to show the efficacy of formaldehyde gas as applied to tubercle bacillus, it is also recognized that conditions of temperature and humidity are very important.
>
> As of possible interest to you, there is enclosed a copy of Reprint No. 287 which will probably furnish the information desired by you in regard to terminal disinfection.
>
> (Signed) By direction of the Surgeon General.
>
> Respectfully,
>
> A. H. GLENNAN,
> Assistant Surgeon General.

In Bulletin 27 (1906)—now out of print—Dr. McClintic devotes over 100 pages to a report of exhaustive work in determining the limitation of formaldehyde gas as a disinfectant, with special reference to car sanitation.

For a sleeping car of 4500 cubic feet, 2000 Cc. of formalin and 1000 grammes permanganate were used, pieces of carpet bearing tuberculous sputum being exposed for two hours, the relative humidity ranging from 78 to 62 percent and the temperature from 83 degrees F. to 87 degrees. Sputum which had been exposed in the smoking-room was injected into a guinea-pig; pig chloroformed on 100th day; increased 255 grammes in weight, no lesions of tuberculosis. Sputum exposed on floor of main sleeping compartment and injected into guinea-pig; pig chloroformed 100th day; increased 235 grammes in weight; no lesion of tuberculosis. Control pig died of tuberculosis the 45th day. *Bacillus coli communis, B. diphtheria, B. typhosus* and *B. subtilis* were all killed in the same fumigation. Similar successful results attended numerous tests of the same kind, where temperature ranged from 74 degrees to 82 degrees F. and humidity from 65 to 58 percent. When air was cool and comparatively dry the results were not satisfactory. It should be taken into consideration that, owing to its many ventilators, a sleeping car could not be practically made as tight as an ordinary room, as shown by the small percentage of gas found in the cars when opened in two hours.

Four or five hours is usually allowed for formaldehyde disinfection in comparatively tight rooms; the longer, of course, the better.

Dr. McClintic's experiments proved conclusively that, with proper conditions of humidity and temperature, formaldehyde gas does kill the tubercle bacillus.

Variation of warmth and moisture in the atmosphere evidently supply all needed explanation of conflicting views regarding the value of formaldehyde fumigation after tuberculosis.

In Bulletin No. 287 (U. S. Public Health Reports, July 9, 1915), Past Assistant Surgeon H. E. Hasseltine says:

> For many years formaldehyde gas has been rated as the foremost gaseous disinfectant, and it still holds its place. Its germicidal effect, when applied under proper conditions, is not denied. While not as rapid as steam or hot water, it does disinfect within a short time. Disinfection by formaldehyde does not, however, mean merely the making of a disagreeable odor. It must be used in a temperature of 65 degrees F., or higher, and with a relative humidity of 65 percent at the beginning of the process. It is, useless to put formaldehyde gas in a room where the temperature is so low that polymerization can take place.

J. Scott MacNutt, A.B., S.B., in his "Manual for Health Officers" (1915), in chapter on cleansing and disinfection after tuberculosis, advises: "Formaldehyde fumigation, for disinfection of carpets, fabrics and surfaces not susceptible of treatment by scrubbing, vacuum cleaning and liquid disinfectants."

Regulation 6 of the Montana State Board of Health reads:

> When any dwelling is vacated after having been occupied by any persons known to have been suffering from tuberculosis, such dwelling shall be thoroughly disinfected in the manner prescribed by the State Board of Health for all other communicable diseases, except that the time the house shall remain closed for the action of formaldehyde gas shall be eight hours instead of four.

FORMALDEHYDE FOR DISEASE GERMS AND SULPHUR FOR INSECTS AND RODENTS.

It should be understood that, while formaldehyde is *by far the best gaseous germicide*, it has practically no value as an insecticide or rodenticide. If insects, other than mosquitoes, are killed by formaldehyde fumigation it is probably because they may have drunk water which, as in drops on a well-sprinkled floor, absorbed enough of the gas to kill through the digestive tract.

Sulphur dioxide is the most practical thing to use for killing insects and vermin. When used for *this* purpose, the dryer the air the better, because (1) the gas is practically as efficient, and (2) because it will not seriously tarnish metals or bleach and weaken fabrics, as would be the case if the atmosphere were damp.

The idea of using formaldehyde and sulphur at the same time is a mistake.* Instead of acting as synergists they seem to oppose each other.

For killing pathogenic bacteria use formaldehyde in a fairly tight room with the air as warm and humid as practicable. Then, if there are insects or vermin to be killed, use sulphur with the air as dry as practicable. One pound of sulphur per 1000 cubic feet should kill mosquitoes and flies in two hours, rodents should succumb to fumes from two pounds in four hours; and roaches, lice, bedbugs, etc., should be killed by five pounds in six hours.

Where no damage can be done by sulphur dioxide in a *humid* atmosphere (in which SO_2 combines with moisture to form H_2SO_3 which is to some extent

* Gardner and Simonds ("Practical Sanitation," 1914) say, on page 60, that "the products of sulphur combustion unite with the formaldehyde and consequently neither portion is of value." They call attention on the same page to the objection to candles with wicks running through the paraform, "as too large a portion of the gas is burned in the process of volatilization." In short, sulphur is always to be burned, while paraform must never be allowed to ignite. With sulphur, fire creates the gas which does the work, while, if paraform catches afire, the formaldehyde gas is destroyed and rendered valueless.

oxidized by air contact to H_2SO_4), five pounds per 1000 cubic feet may be used to kill everything—disease germs, insects and rodents.

Plants and pets should, of course, always be removed from a room before sulphur fumigation, and we have found that with full formaldehyde disinfection —2 ounces net, solid formaldehyde per 1000 cubic feet over night—nearly all of twenty different test plants showed some effect except the rubber plant. Formaldehyde has no effect on room furnishings and decorations other than plants.

Hydrocyanic acid is an efficient insecticide and rodenticide; but it is so exceedingly dangerous to handle that it should never be used where possibly escaping gas could reach either human beings or domestic animals.

A well-recognized authority says the addition of one-half ounce of camphor, to a solid formaldehyde disinfection for 1000 cubic feet, will kill insects. Experiments made by the writer with this method were disappointing, as were others along similar lines.

Para-dichlorobenzene has been proposed as an insect fumigant. But as one pound per *hundred* cubic feet is directed to be used at a temperature between 75 and 85 degrees F., with an exposure of 36 hours, it offers little as a practical insecticide. Details regarding it are given by A. B. Duckett in Bulletin of the U. S. Department of Agriculture, No. 167.

CHOICE OF FORMALDEHYDE METHODS.

Preference has been shown by many boards of health for the formalin-permanganate process. While some of the formaldehyde is actually consumed in the violent reaction, the sudden evolution of gas with moisture has advantages in the hands of experts. When permanganate gave out on account of war conditions, other oxidizing agents were resorted to, such as potassium dichromate (Pennsylvania) and chlorinated lime (Chicago).

It is noticeable that some sort of caution or warning goes with all such methods.

Regarding the permanganate method, Gardner and Simonds ("Practical Sanitation," page 59) say: "In this process the formaldehyde is poured over potassium permanganate crystals, in the proportion of one quart of the former to one pound of the latter.

"CAUTION! If the permanganate is thrown into the formalin it may explode." Capitals and italics theirs.

This amount is used in some states per 1000 cubic feet; but the United States Public Health Service directs only 10 ounces of formalin (40 percent solution of formaldehyde) and 5 ounces of permanganate if temperature is above 60 degrees F. and air is not too dry.

This government authority says (Bulletin 42, page 10):

"On account of the vigorous ebullition during the reaction, a ten-quart pail should be used for mixing therein 10 ounces of formalin and 5 ounces of permanganate. Even then a few drops of the mixture may be thrown over, so that it is well to place the pail in a large tin pan or upon something to protect the carpet or floor. To prevent this sputtering over there is some advantage in using a pail with a flared top. As the process is attended with slight danger of fire, the reaction, which is quickly over, should be watched through a window or the pails placed on a non-inflammable surface."

With the chlorinated lime method, as used in Chicago, goes a WARNING regarding the danger of injury to "woodwork, fabrics, etc.," should any of the disinfecting material come in direct contact with them.

In Pennsylvania, where the dichromate method is used, it is directed to pull

" the tin container out of the room by an attached cord one-half hour after the reaction has been started. The residue should be removed from the can immediately and the vessel should be scrubbed with soap and water."

These dangers and inconveniences are avoided by volatilizing solidified formaldehyde (paraform) by means of applying heat under a metal receptacle containing it—two ounces net formaldehyde being used per 1000 cubic feet (according to Bulletin 42, Public Health and Marine Hospital Service of the United States)

DIFFERENT AGENCIES OF INFECTION SHOUD RECEIVE THEIR PROPER SHARE OF ATTENTION.

Prior to the recognition of carriers, the dangers from fomites and infected apartments were, it is true, over-rated. Now the pendulum, so to speak, shows a tendency, in certain quarters, to swing to the other extreme. It is easy to see how the presence of unrecognized carriers, in the home or in crowded places, can upset calculations regarding the efficiency of terminal disinfection. The fact, however, that the great majority of State health officers contributing to the symposium favor the continuance of gaseous disinfection indicates that a fairly stable equilibrium will soon be established, each agency for conveying infection receiving its fair degree of consideration.

Aerial disinfection has also suffered because (1) too little formaldehyde was used and (2) owing to lack of proper conditions of temperature and humidity.

When one considers the cost of the alternative offered—repapering, repainting, etc.—the slight expense of making the air warm and moist and using plenty of formaldehyde is a very small matter. It is quite practical and advantageous to supply some moisture with the disinfectant in commercial fumigators; but, as it is desirable to volatilize the formaldehyde as quickly as possible, the addition of much water to the formaldehyde has the objection of considerably prolonging the time needed to drive off the gas. The bulk of the moisture may best be obtained by introducing steam into the air independently, as by causing water to boil in the room in any convenient manner, or, in fairly damp weather, by simply sprinkling the floor liberally.

With the air thus properly conditioned the volatilization of two ounces solidified formaldehyde per 1000 cubic feet should insure efficient disinfection of the room and its general contents. Bedding and material which has been in close contact with the patient may well be sent to a disinfecting station, or at least be given a thorough sunning and airing, in addition. It should be remembered that the alternative of repainting, repapering, etc., leaves bedding, etc., to be cared for *entirely* in some other way.

CONCLUSION.

A large majority of the state health officers, joining in the symposium, favor a continuance of formaldehyde gas disinfection.

We should not neglect one cause of spreading communicable diseases (room infection) because we have found another (carriers), whatever the relative importance of the two agencies may be.

To destroy bacteria volatilize formaldehyde, without ignition, in warm, moist air.

To kill insects and vermin, burn sulphur in dry air.

While, as pharmacists, we should supply trustworthy means for combating communicable diseases, as citizens we should look for their underlying causes and assist in correcting them.

HOSPITAL CORPS OF UNITED STATES ARMY.*

For more than sixty years the American Pharmaceutical Association worked for advancement in pharmacy and its allied branches; its inception and all of its endeavors during this time have been not only for such advancement but the betterment of its members and pharmacists generally. This has been accomplished by the promotion of better and higher educational requirements, more efficient and higher standards for drugs, preventing sophistication and adulteration, and at the same time conserving and protecting the public health.

For years one of the endeavors of this organization has been the improvement of the condition of the pharmacists in the Government service. Before the Association entered this field of endeavor the conditions were such that men of pharmaceutical education and training were loath to enter the service as pharmacists. Pharmacists in the Navy and the Public Health Service have received recognition from Congress and their conditions are much improved, largely through the efforts of the American Pharmaceutical Association, but the Hospital Corps, U. S. Army, has not fared so well; the conditions to-day are practically the same as they have been for years. The American Pharmaceutical Association has for about ten years been working and endeavoring to show the Department and Congress that it was necessary to improve the conditions of the Hospital Corps if they desired to obtain efficient men to enter the service and retain the men who composed the Corps. Many of the latter had become expert in bacteriology and the preparation of serums and vaccines, for the reason that the law governing this branch of the service offered absolutely no inducement whatever for men of pharmaceutical training to enter the service, and those who had acquired knowledge and become expert in certain lines could obtain better remuneration from private business concerns.

The Surgeon-General has reported many times his inability to obtain the men he desired and that it was impossible to secure a full complement of men for the Corps.

The present program of preparedness of President Wilson, providing for the reorganization of the Army, seemed to be the proper time to do something for the members of the Hospital Corps. The endeavors of the Surgeon-General and that of the American Pharmaceutical Association have helped to persuade the Committee on Military Affairs of both Houses of Congress to report a bill which contains provisions for the betterment of the Corps and its members, and there seems to be no doubt that this bill will shortly become a law.

By the terms of this bill the Hospital Corps becomes the enlisted force of the Medical Department, two new grades are provided: Master Hospital Sergeant, at $75 per month, and Hospital Sergeants, at $65 per month and allowances. Below these come the six former grades ranking in pay from $15 to $50 per month for Sergeants first class. Master Hospital Sergeants are to be appointed by the Secretary of War, but only after an examination before a board of medical officers, which examination shall include pharmacy and the applicant must have served at least twelve months satisfactorily as hospital sergeant or sergeant first class. It also provides that original enlistments hereafter for the Medical Department shall be made in the grade of private, and the Secretary of War may make such regulations as are deemed necessary. It is further provided that the total number

* By S. L. Hilton, Chairman of the Committee on the Status of Pharmacists in the Government Service.

of enlisted men in the Medical Department shall be approximately equal to, but not to exceed, five percentum of the total enlisted strength of the army authorized by law, except in time of war, when the Secretary of War may increase the number as the service may require. It is further provided that the number in each of the several grades shall not exceed the following percentages of the total authorized enlisted strength of the Medical Department: Master Hospital Sergeants, ½ percent; Hospital Sergeants, ½ percent; Sergeants, first class, 7 percent; Sergeants, 11 percent; Corporals, 5 percent; Privates, first class, and Privates, the remainder of the number authorized by law.

The following is a comparative statement showing how the proposed bill will increase the strength and improve the condition of this branch of the service.

Based on the present strength of the army, total 4436.		Proposed increase as provided by the bill, 6328.
Master Hospital Sergeants	22	32
Hospital Sergeants	22	32
Sergeants, First Class	300	442
Sergeants	488	696
Corporals	222	316

Ratings: Surgical Assistants, $5; Dispensary Assistants, $2; Nurse, $3.

The bill has passed the House of Representatives and will shortly be considered by the Senate, the time is now propitious for our Association to assist in this good work and use every endeavor to have the provisions of this bill enacted into law, *a letter to your Senator will be of help.*

While the titles provided by the bill are not what we have desired, the provisions are in accord with what we have been asking and working for. Our Association would have preferred that the ranking men be given a commission as pharmacists; the opposition, however, was so strong that to continue any endeavor with this object in view would have no doubt resulted in defeat not only in this provision, but in the other increases we were asking. We therefore concluded to accept and work for the proposition as provided by the bill and thereby help the members of this branch of the service, many of whom are members of our organization.

In a way the pharmacists of the army are receiving some slight recognition and the provisions of the bill show that Congress and the Department are recognizing the value of the pharmacists in the Army. Let us further continue our efforts so that in the near future the pharmacists in the Army will be commissioned.

" If we were to sail along under fair winds, each lying at his ease, life would teach us nothing but lazy selfishness. The contrary wind gives us the fellowship of the oars—the need of keeping time with one another, of each helping the others while he pulls away on his own thwart. No finer sound rises to heaven than the comrade song of the rowers. Surely we all know that the best things life has brought us—the things that bring the deepest satisfaction—have been the chances of service."—*Selected.*

THE TEACHING OF COMMERCIAL PHARMACY.*

BY HENRY P. HYNSON.

Strongly obsessed with a sense of the importance of this occasion and deeply impressed by the far-reaching opportunities offered me, I refrain from apologizing, explaining and, indeed, from reciting the usual opening anecdote, that might put me more fairly before you.

If you question why I regard the occasion of so great importance, I answer, without hesitation, that pharmacy and pharmacists are now suffering more from the lack of proper commercial teaching than from any other cause or, it may be, from all other deficiencies combined, and what affects pharmacy and pharmacists concerns all those with whom these have to do, meaning the multitudes who are patrons of pharmacists. And more, this is just the time when commerce and commercial things are claiming the attention of the world—next to war—and it is now that the best of the world's knowledge is being applied to commerce, and it is now that the difference between the commercialist and the professionalist, merely because of their vocations, has faded entirely away or into the faintest shade.

A word regarding our mutual responsibilities. While uncomfortably sensible of my own responsibility and fearing that I have presumed to accept one so great, I am not afraid to warn you that yours is even greater than mine. Not only must you try to understand me and comprehend my meaning, but you must put my offerings to the test and, if I am incorrect, you are, in duty bound, to find the truth upon this subject and not only set it upright in your own minds, but you, in your responsible various connections with this great institution and its unusual influence, and you, with your responsible connections with the drug trade and the pharmaceutical press of this great metropolis, considering the limitless influence of the latter, must make the truth, as you find it, felt all over this land of ours. I have no desire to flatter you and your city, but New York is now, or soon will be, "*The World*" and as goes New York, so goes the world. I should feel that I had filled my greatest possible mission, could I make you really appreciate how much you could do for pharmacy and then induce you to do it.

One may reach an age when he feels that he must not always make favorable criticism and when he must, for the good he may do, run counter to the views of others. I trust, therefore, that I may be pardoned for stating that I believe all the addresses which have heretofore been delivered before you upon different phases of commercial pharmacy have failed to impress you with the importance of making commercial training a prominent part of the curriculum of a school of pharmacy, because all of them, in my opinion, were distinctly post-graduate in character and did not set forth plans for the more elementary teaching of the commercial science, as it may be applied to pharmaceutical practice, nor did they show how practical a commercial course may be made.

I feel that I must protect myself behind an actual "wall of necessity" for this training, otherwise I will be pounded with the old well-worn protest that: "All this knowledge should have been acquired before the student enters a school of pharmacy," and I very confidently believe that those who would so argue know very little about the condition and character of mind that is required to take up this study. It is not the proper kind of study for a child—for an undeveloped mind. Educators discredit themselves when they include specific commercial training in

* An address at the Annual Meeting of New York College of Pharmacy, March 21, 1916.

a high school course. Commercial science is justly classified with the other practical sciences, such as those that are combined in a course of pharmacy. It is much the same as the different phases of engineering, and back of all this, as a greater support to the " wall of necessity " are the *actual needs* of the students, even high school graduates, which may be easily ascertained by requiring them to write a commercial letter, such as an application for a position or a request for credit. Scientific farming may have improved the quality of grain, but the mills must still grind the grist that is brought to them.

It has occurred to me that I may more successfully present to you my ideas regarding the details of a course in commercial pharmacy, by reading to you, as far as time will allow, from the manuscript of a treatise on the subject that I have had under preparation for a number of years, but which I have not hastened to finish and publish, because of my numerous enemies. " Oh, that mine enemy would write a book." And if I may be permitted to do so, I will give extracts and examples from the actual course I have been giving, with more or less changes, during the last fourteen years.

It will please and greatly assist me, if as many as are interested will bear with me patiently during the remainder of my address and, having heard what I have read and said, will be good enough to write me their honest convictions as to whether or not they believe such a treatise as outlined would be helpful to students of pharmacy, or if such a book, slightly or even greatly modified, would meet the needs of the time. For such criticism, I will be truly and greatly obliged.

From the proposed treatise I read as follows:

COMMERCIAL PHARMACY.

Introductory Description.

Commercial Pharmacy, as contemplated by this treatise, includes all those doings, peculiar to the business life of the pharmacist, which are not usually regarded as scientific or technical and which have not been generally taught in colleges of pharmacy nor fully discussed in pharmaceutical text-books and other books relating to pharmacy. It has much to do with such practical and oftentimes intricate subjects as were formerly taught apprentices by their preceptors. It includes knowledge of general business principles, facility in business practices and familiarity with business forms; all of which are desirable and becoming accomplishments that will greatly assist their possessor in acquiring creditable pharmaceutical and business standing. They are qualifications such as all classes of tradesmen might use to advantage and are not peculiar to the drug business, but are such as are absolutely necessary to make one competent to properly conduct a retail pharmacy, maintain necessary credit and win financial success.

Leading credit men connected with the wholesale drug trade have freely announced the belief that the business education of pharmacists needs to be advanced and that a lack of commercial training is often the cause of many of them failing to meet their obligations, which means that, while they may be well trained in the scientific and technical phases of their profession, they are not, as a class, successful in a business sense; that is, do not accumulate money, a conclusion that is emphatically endorsed by pharmaceutical journals, leading writers and successful pharmacists. This defect in the preparation of pharmacists for business has been found, upon further investigation, to be so pronounced, that the National Wholesale Druggists' Association has thought it wise to urge its members to exercise almost a paternal supervision over retail druggists who deal with them, regarding their purchases, their investments and their book-keeping, which, although, no doubt, warranted, is, nevertheless, very humiliating to those of us who are ambitious regarding our calling.

Justice cannot be done the *profession* of pharmacy unless we accept the truth that, while the practice of the profession may, for purposes of profit, be dependent upon good commercial practices, pharmacy is not, itself, dependent upon them. The science and art of pharmacy

might be quite successfully and most creditably practised without the slightest reference to trade considerations, just as the science and art of surgery may be practised without the slightest consideration as to how much is done or how much it pays. Let it be understood, then, that trade—what is known as barter and sale—is not an essential part of the profession of pharmacy, but is merely incidental to it; yet, trading is the money-making feature of pharmacy.

The handling of articles which are entirely apart from the real purposes of pharmacy and which may be supplied without the use of pharmaceutical knowledge or pharmaceutical technic, cannot be considered a part of the practice of pharmacy, but, since the purchase and sale of many such commodities are largely made by pharmacists, they may be consistently considered in a treatise on commercial pharmacy, side-lines auxiliary to pharmacy, but not a part of it. This must not make it appear that they must receive different commercial treatment. Drugs and medicines are merchandise and subject to exactly the same commercial control as the side lines.

The Science of Commerce.

If we regard the science of any subject to be the exact truth concerning that subject, so far as the truth has been discovered, then we may very properly regard the truth that may be learned about commercial things and doings as the science of commerce. And this real scientific knowledge to be had about trade and trading, bears the same favorable relationship to haphazard knowledge of such practices that the true and accurate knowledge of chemistry bears to the superficial kind that is learned in practice without training. The real, truthful knowledge of commercial practices is the kind that we should try to acquire, in spite of the fact that what we call commercial pharmacy, necessarily, deals with money getting, with profit making and is largely influenced by such considerations.

Regarding the different classes of pharmacists, while it is true that there are qualified pharmacists and assistant pharmacists, proprietors, managers and clerks, the commercial line dividing any one of these classes from another is generally imperceptible. Therefore and because members of these several classes are constantly changing their relative positions, no attempt will be made, in this treatise, to provide special teachings for any particular class of pharmacists.

The General and Far-reaching Usefulness of Commercial Pharmacy.

Those who are just beginning the study of pharmacy should gain, as rapidly as possible, commercial knowledge similar to that which may be acquired from the following pages, because the possession of some such knowledge will not only *prepare* them for promotion, but its use and application will greatly assist in securing the promotion and the greater financial reward that every properly constructed person desires.

To the registered pharmacist and salesman, it will be, for the same reason, most helpful and, to the manager, proprietor, member of a firm, or officer of a corporation, commecial accomplishments are, unquestionably, necessary, and, since a great many retail pharmacists develop into jobbers and manufacturing pharmacists, who *must* follow good business principles, this training, which is meant to be fundamental, will serve admirably as preparation for these larger fields of commercial activity.

Fundamentals: The Adoption of Standards: Forming Models for Imitation.

The very first and, by all means, the most important move that a student of pharmacy should make, is the one which will establish standards for himself. He should fix in his mind models with which he may compare himself; by which he may ascertain his needs, discover his short-comings, and test his progress. Without these standards of models and without these comparisons, he will be unable to know how he should appear and act, or what he should study and how much he should know. While at school, standards of study are fixed for him, but, when he has successfully passed out of college, in addition to the standards for his personality, which he has already adopted, he must also create, for himself, social and business standards of excellence.

The Fixing of Standards.

Nothing so greatly affects the progress and success of an individual as do the standards or models he has set up for himself, and these must be many, including those of: carriage, manners, cleanliness, conversation and character, in addition to educational and technical standards.

When looking for these, especially for standards relating to our own personalities, we should often go out beyond our own homes and out beyond our own circle of friends and acquaintances. We must ascertain if those among whom we have been thrown are what are known as "*conventional*," meaning in accord with the times and the better doings of the times in which we are living. One must not follow the mannerisms or styles of his natural surroundings, if these do not agree with what is accepted by the world as being in good form. This is best illustrated by the outrageous and disgraceful table manners of many reputable families, which, to follow, would ostracize one from anything like polite society. Extravagant or snobbish standards should not be thought of, but standards that are based on good usage should be adopted, such as would be acceptable to the majority of the more intelligent people of a community; acceptable, especially, to persons who are educated and have travelled.

Standards may not, necessarily, remain fixed, or the same, indefinitely. They should be changed as greater intelligence and better opportunity may indicate, but they should not be changed merely to agree with fads, so-called, or influences that are not creditable to follow, such as the tendency to imitate foreigners or those much given to exaggeration. Reference will be made to particular standards, while treating the various subjects that will follow.

The Person.

The personality of the pharmacist, or of one who proposes to become a pharmacist, is of much importance. While pharmacy is a vocation requiring no great physical strength or power, it does require a considerable amount of endurance and, because the hours of attendance upon duty are comparatively long and because most of the time devoted to business is, necessarily, spent indoors, it is not the proper engagement for those predisposed to tubercular trouble or those with anæmic tendencies. It is a business suited neither to a deformed nor to a crippled person; quick, well-ordered movements are required and extraordinary control and use of the hands and fingers are necessary.

As successful salesmanship is an important qualification of the pharmacist and since the personality of the salesman has much to do with his success, appearance, or address, as it is more politely called, must be seriously thought about, much thought about. One cannot, of course, change his features, neither can he materially alter his size, but there are some defects which may be remedied. The habit of stooping, for instance, may be and should be overcome, by thoughtful and determined effort: rounded shoulders may be corrected by similar effort, assisted by braces; an awkward, ungainly gait or slovenly carriage may be easily changed; bad, unsightly teeth may be improved or replaced by a dentist; nothing so greatly hinders good conversational effects as do imperfect teeth. To a careful, discriminating person, such remediable defects will create disgust of a most uncomplimentary nature. Besides, decayed teeth are frequently the cause of one of the most repulsive characteristics a person may possess; one that may be a great hindrance, even to commercial success, and always a nuisance to those who must come in close contact with such an unfortunate, who, in many instances, is not at all conscious of the heavy handicap he is carrying—an offensive breath. One should strive to ascertain the true condition of his exhalations and, if far from normal, he should seek, by all possible means, to correct the trouble, which must arise from either: carious teeth, as before stated; an unhealthy condition of the mucous membrane lining the mouth, nose or throat; a disordered stomach; lack of care, or uncleanliness. Unfortunately, we become used or insensible to odors that are a part of us and we must not, therefore, be too sure regarding our bodies. There are many conditions, especially diseased conditions, which may make us very unpleasant associates, consequently, effort should be constantly made to discover such troubles and, when found, they should be treated medically, surgically or dentally, as the special defect may require.

Personal Cleanliness.

Personal cleanliness includes, besides the general cleanliness of the body, proper attention to the hair and beard and, *especially, care of the hands and nails;* regular, daily and persistent attention to the latter is suggested. One should, early in life, learn to be his own barber, so far as his beard is concerned, and certainly his own accomplished manicurist.

Consideration of the delicate—rather, the indelicate—subject of personal uncleanliness will, no doubt, be thought out of place, by some persons, in a course of study bearing the title this one bears but, when it is remembered that conditions, actually existing conditions, need to be treated and that it is intended to remove, as far as possible, all hinderances to commercial success, criticism upon this point, at least, should be withdrawn. Indeed, our best efforts should be directed towards rescuing the one stray sheep, while congratulating those more highly favored. It has been oftentimes and generally reported that the employment or continuance in employment of many technically qualified assistants has been impossible because of their very apparent uncleanly condition, which, of course, would render them objectionable to discriminating customers. It is also well-known that the outrageous want of personal cleanliness and the disgusting habits of some able pharmacists, who have been in business on their own account, have not only been the subject of much derision, but the real cause of financial failure. It is positively dangerous, then, for a young person seeking a creditable position in pharmaceutical or business life, not to have proper standards for his body and its keeping, or not to live up to these standards. Home training, it is admitted, should have provided for all this, but its failure should not be allowed to make commercial disaster certain. Let each individual make of himself, so far as possible, something of a model for those with whom he is to be associated, then, surely, he will not fail. Besides, next to a physician, surgeon or nurse, who should be more cleanly in person and habits than a pharmacist, and who, as a salesman or man of business, seeking to make favorable impression, should be more attractive? The standard for personal cleanliness should be fixed at the highest possible point and should be intelligently and conscientiously met.

Dress.

Nothing can add so much to the business man's attractiveness as proper and careful attire, and nothing will so greatly detract from natural personal advantages as will careless and improper dressing. It was Disraeli, the great Lord Beaconsfield, who won distinguished and substantial success against the most trying obstacles, who said a man's success in life is largely dependent upon his tailor. Dress is a subject that requires observation, thought and study. To the possessor of ample means, it is a comparatively easy matter, but when one has correct and sufficiently high ideals in this direction, with but scanty means, it offers a serious perplexity at times. It is, however, a business difficulty which must be overcome in a business way. A pharmacist had better slight his store and stock than his wardrobe.

The selection of a tailor is a matter of nearly as much importance and about as difficult as the selection of a physician, a dentist or even a pharmacist! One is no more able to properly treat personal ailments than he is able to properly fit himself with a suit of clothes or select the proper quality of cloth. It is often because of their presumed abilities, in this regard, that so many persons are oddly and badly dressed. Warning is made against the average clothing salesman whose one object seems to be to sell, and who frequently makes veritable monkeys out of his too confiding customers.

Warning is as earnestly made against your own personal oddities, generally, and, especially, in this matter of dress, which often lead to the wearing of conspicuous and inappropriate apparel; including, of course, head and foot wear.

It is a perfectly safe rule that keeps one inside and along the middle lines of fashion, but away from extremes and fads. Seasonable dressing is important, not only for reasons of personal comfort, but for effect, also, as is *respectful* dressing. Respect and deference are always due customers, especially ladies; shirt-sleeves are never and nowhere respectful. Dress should be consistent with one's age and station. A professional man should invariably maintain the dignity of his profession in dress, as in every other respect.

If personal cleanliness is important, so is cleanliness in dress; indeed, it is paramount; to it, style and quality are secondary. Fine, fresh linen is the stamp of the gentleman, and the reverse is a heavy handicap to anyone who aspires to hold the position of a gentleman and win favor with the more refined. The pharmacist must be carefully dressed; it argues well for his prescription case and for his soda water counter. Surely it is most unfortunate ignorance or the direct necessity that leads one to use celluloid collars and cuffs. Yet, as vulgar and discreditable as these are, if clean, they are far better than is soiled linen.

Caution might be added here, against the possible offensive condition of the pharmacist's clothing, through the absorption of such odors as are produced by iodoform, asafœtida and the valerates; odors to which the operator becomes very nearly insensible, but which are particularly disagreeable to many laymen, especially to ladies. This condition prevails with smokers, particularly those using cigarettes; they have no idea how disagreeable their very presence may be, more certainly to those in ill health. The practice many pharmacists have, of using large quantities of perfume extracts, largely because they are at hand and are repeatedly handled, renders such persons very offensive to those of refined sensibilities. All of these very common-place matters need our closest attention and apply to the case of salesrooms and laboratories with as much force as they do to person and clothing.

To these chapters, I have added a chapter on the mind and its training, setting forth the necessity of orderly training of the mind for business purposes; a chapter on the application of general education to business purposes, making effort to show just where such general attainments may be made profitable; another on correct and pleasing speech, including, as sub-subjects, "The Voice," "Pronunciation," "The Selection and Valuation of Words," "Common Grammatical Errors," and "Improper Construction of Sentences." Also in this first part of the treatise, which is devoted to the personality of the commercialist, I have given considerable space to character, especially business character, and to personal address and manners.

In the second part of the proposed treatise, I have discussed, with great pains, business writing as being of paramount importance to the business man of to-day, referring more particularly to correspondence, including circular writing, and to the writing of advertisements. This chapter treats such subjects as: writing material; stationery; penmanship; typewriting.

Under "Contracts," a most important division, is discussed the rental and purchase of real property, agreements with public utility corporations, insurance policies of all kinds, yet following this consideration of contracts, serious warning is given against depending too far upon one's own knowledge; the employment of a competent attorney for complicated situations is strongly urged. Other subjects are: "Credits," "Credit Men," "Commercial Agencies," "Banks," and "Banking." Especially is the usefulness of the bank in its various phases fully set forth, which is closely connected with loans and the securing of capital. The control of capital sufficient to meet the requirements of the undertaking is seriously dealt with and the warning is plainly given against entering business without ample provisions of this sort.

Many of the daily details and many commercial practices are given practical demonstration in the division devoted to bookkeeping and, if, when I reach the opportunity, I have not already too greatly extended this address, I will illustrate the possibility of stating the theory and giving the practice of a commercial transaction at the same time.

Bookkeeping, which I prefer to style "Business Record Keeping," is comprehensive enough to be considered alone, at such an occasion as this. It should be taught in accord with the more modern and really scientific methods. It is no longer a system of forms and there is now an aversion with those who know book-

keeping to such terms as " single entry " and " double entry." Instead of these, should be used " incomplete " and " complete." There are fundamental principles or rules controlling the keeping of business records that are as fixed and as certain as their names imply: " Truth," " Fairness," " Justice," to men and things, are the directing and controlling influences. An accountant who cannot test the propriety of a charge by the " Golden Rule " fails to use his surest and best safeguard. The teaching by some that there is a difference between a personal and an inanimate account is pernicious.

So-called " bookkeeping " may be made very practical for the student of pharmacy, by using a month's business for an average retail store and by selecting December as the month and by giving the desire to close the fiscal year concurrent with the calendar year as an excuse for taking inventories and closing the books, the principles and practices involved in an entire year may be covered in this one month.

I have such a record. It includes entries sufficient to illustrate the principles involved in almost any transaction that may come up for treatment in the business life of the average pharmacist.

I will read three days of this record:

December 1. Began business with a capital of five thousand dollars in certified check, gift from Father, which was deposited in bank. Drew twenty-five dollars from bank to be used for small expenses, as needed.

Received invoice for shelving counters and wall cases amounting to $1200.00 from F. G. Bracket. Received invoice from H. O. Sale & Co., amounting to $905.10 for drugs, medicines, patent medicines. Paid 25 cents for bucket, 15 cents for scrub brush, 10 cents for soap, 25 cents for broom. Paid woman for washing windows and cleaning store, $1.00. Bought hatchet, 50 cents; nail puller, $1.25. Paid B. E. Good $6.00, insurance on fixtures. Paid T. E. Householder $50.00 for rent, in advance.

December 10. Received invoices from: Keen and Heighs, $19.20; H. O. Sale & Co., $34.92; a second invoice from H. O. Sale & Co. for $16.05; Cecil Cigar Co., $14.20. Paid for lemons, 25 cents, for soda fountain, and took out of stock for same, one bottle bromo seltzer, 34 cents; 4 ounces aromatic spirit of ammonia, 15 cents; 1 pint of alcohol for cigar counter, 38 cents. Cash sales: Merchandise, $16.40; soda water, $5.90; cigars, $3.50. Paid $2.50 for Pharmacopœia and $7.50 for Dispensatory.

December 15. Paid $25.00 for suit of clothes, by check. Received invoices from G. Lass Ware & Co. for bottles and corks, $9.50; H. O. Sale & Co., $14.60; freight on G. Lass Ware & Co.'s goods, 34 cents. Invoice from Charles Wright & Co., $6.35. Paid annual dues: State Association, $2.00; American Pharmaceutical Association, $5.00. Sold C. K. Harrison on account: Prescription 4697, 50 cents; 4698, 40 cents; 4699, 60 cents; atomizer, $1.00; dropper, 10 cents; 1 pound absorbent cotton, 40 cents. Sold Dr. A. R. Blaud 1 ounce calomel, 25 cents; 1 ounce Dover's powder, 35 cents; 1 pound absorbent cotton, 30 cents. Sold H. O. Sale & Co., ¼ dozen compound syrup of hypophosphites at $8.00, less 10 percent; ½ dozen aromatic castor oil, at 75 cents, less 10 percent. Cash sales: Merchandise, $34.90; soda water, $3.35; cigars, $1.50. Paid subscriptions to drug and soda water journals, $5.50.

It would be tedious to write of the multitude of items that may be presented to the student of a most practical nature, in connection with these records. All the details of making deposits, keeping a bank account, drawing checks; the purchase of certified checks, the responsibilities regarding checks, may be so demonstrated and actual practice regarding them secured.

The segregation of charges to the proper accounts is interesting and important. The establishment of proper and profitably kept " Department Accounts " may be

fully set forth. Remarkable instances may be given of universal difficulties students have with some of the problems appearing in this record of thirty days, which is not only interestingly comprehensive, but is most profitably worked out by the embryo business man.

On the tenth and twentieth of the month, trial balances are required to be made and, following the thirty-first day, the following appears.

"Make up inventories; make trial balance; take off a balance sheet; balance cash account and balance or arrange the other accounts to make the business or fiscal year begin with the calendar year."

In conclusion, let me commend to you who are already in business and have not become sufficiently familiar with accounting to be fascinated by it, the further study and investigation of the subject, that you may not only profit by its helpfulness, but that you may have this additional interest in your work and the added happiness it gives in your lives.

INDUSTRIAL RESEARCH IN UNIVERSITIES.

BY H. K. BENSON.*

Popular interest has lent itself to the problem of a more intensive application of the discoveries of science to the industrial life of the nation. As time goes on and we catch glimpses of the coming reorganization of industry in Europe, we see more clearly than ever the necessity of making this nation more largely self-contained. This burden rests largely upon our productive capacity—the ability to utilize our own stores—and resources. Everywhere this challenge meets with enthusiastic response and our universities have caught the spirit of the new awakening.

The exact manner of participation will, no doubt, vary greatly with the type and character of the institution. The aloofness of the colleges and universities has not been due to unwillingness to participate in industrial upbuilding. It is in part the inheritance of classical ideals and of cultural requirements that has retarded the advent of industrial problems as subjects of study and research in the curricula of our colleges. But now, apparently, a general awakening has come alike to industry and to the educational institutions, with the result that both may be enriched by rational coöperation.

With this thought in mind, the University of Washington has organized a bureau of industrial research to which the industries of the state may refer their problems and by mutual assistance seek their solution. By this plan the University seeks to enlarge not only its usefulness in service, but also its efficiency in the training of its students, and through a greater coördination of its faculty. The general plan is as follows: A given industry submits its problem to the bureau and sets aside a sum of money to establish an industrial fellowship. Thereupon, a committee of the faculty, chosen with reference to fitness or expert knowledge of details required in the solution of the problem, prepares a working plan or outline of the investigation, which is next submitted to a similar committee of the donating corporation and jointly modified and accepted. A graduate student is then assigned to the project and is paid a stipend of not less than $500 per annum. As additional compensation he is allowed to offer his research for thesis require-

* Director of the Bureau of Industrial Research, University of Washington.

ments and to carry a limited number of hours to apply on the requirements for an advanced degree. The fellow therefore acquires not only academic advancement but a highly specialized training which frequently leads him into a place of responsibility in the given industry. The university gains, not only in its contact with the given industry through its service, but in the substantial impetus given to its graduate work, as well as the inspiring influence upon its undergraduate work. The industry secures its desired data and is further enriched by the familiarity of the faculty experts with its problems and by securing a scientifically trained worker who may be added to its staff.

Incidental to the practical working out of the plan are a number of features which involve the overthrowing of traditional observances. For example, it may be necessary to withhold from publication for a limited period of time the results of the investigation. During this time the industry is expected to protect itself through the procuring of patents, or in other ways obtain the rewards of its enterprise. The community as a whole, however, always gains in the heightened efficiency of its industries, and thus is recompensed in a material, though perhaps indirect, manner.

The subjects offered for investigation cover a wide range. Problems dealing with iron and steel manufacture, fertilizers, and wood preservation have been assigned to the bureau and are under investigation. These problems bring into action the departments of geology, mining, chemistry, forestry, mechanical engineering, and civil engineering. The school of pharmacy is vitally interested in proposals to investigate the feasibility of a drug plant industry. The mild, humid climate of the Pacific Coast seems well suited to the growth of drug plants. Digitalis is found growing as a weed over many square miles of unused logged-off land. Belladonna thrives luxuriantly on the sandy loams and yields two crops per year, each of higher alkaloidal content than the pharmacopœial requirements. Golden seal, ginseng, cascara, and peppermint oil are already marketed in considerable quantities. A systematic study of the possibilities, including assays, plot tests, markets, and, finally, an association of growers, seems likely to be of interest and value, not only as a new industry for the state, but as a new source of supply within this country to drug manufacturers.

DRUG PLANT INVESTIGATIONS.

The U. S. Bureau of Plant Industry has carried on for a number of years experiments designed to ensure better methods of cultivating and utilizing drug plants, and noteworthy results have recently been recorded. About 150 species of drug and related plants are now under experimental culture on heavy clay at Arlington Farm and on sandy loam near Glen Dale, Md. At Arlington permanent plantings are being made, which will furnish material, now badly needed, for standardizing crude drugs. One important line of inquiry is in regard to the relation of special feeding to the development of the active principles in medicinal plants. A new strain of belladonna has been obtained by the Bureau through breeding and selection which has a greatly increased alkaloidal content and points the way to a notable improvement in the quality of this drug now found on the market.

COMBATING WAR PRICES BY THE USE OF GALENICALS.*

BY ROBERT P. FISCHELIS.

In these days of uncertainty and speculation in the drug market, it is important for the pharmacist to utilize all means at his command in an effort to meet the demands of physicians, and at the same time supply the remedies prescribed at as reasonable a price as possible.

Coöperation between the professions of medicine and pharmacy was never more urgently needed than it is to-day, and undoubtedly much good can be accomplished if the doctor and druggist will work together, while great harm may result if their paths diverge at this time.

Reports of the scarcity of some medicinal products are becoming more alarming each day, and those who have followed the situation closely feel that perhaps "the worst is yet to come." Pharmacists and physicians should therefore get together with the view of utilizing, as far as possible, those medicinal products which are at hand, and curtailing the use of those products which are scarce and high in price, either because of the isolation of the source of supply or because of artificial conditions created by speculators.

It is expected that physicians and pharmacists have the welfare of the public at heart, and while it is impossible to prepare and compound medicines without making a charge commensurate with the market prices of the drugs contained in them, it may be possible, in some cases at least, to prescribe drugs or preparations which, while giving similar therapeutic action, are lower in price than some others which are used in general practice. Of course, the selection of the drug rests entirely with the physician, for after a prescription is once written and given to the pharmacist it is his duty to furnish the articles called for and nothing else. If the components are not in stock and cannot be bought, then the doctor must decide what is to be used in place of the unobtainable article or articles. The pharmacist can make suggestions, however, which will tend to aid in relieving the situation. His intimate touch with and study of the drug market give him first-hand knowledge as to which drugs or chemicals are scarce, unobtainable, or extremely high in price, and whether or not this condition is to continue. Any reasonable physician confronted with the facts as they are will fall into line with the propaganda for cutting down the cost of medicines to the ultimate consumer—the public.

In looking over the pages of the United States Dispensatory headed "Index of Diseases," we find a list of drugs which may be used in the treatment of each ailment mentioned. Under some of these headings we have as many as one hundred suggested remedies. Surely, some of these could be eliminated at this time, if necessary, and there would still be a sufficient number left to cover the needs of the practitioner. Most authorities agree that there are very few specifics in medicine. A Public Health Officer not very long ago made the statement that there were only three specifics known to the medical man, namely: quinine for malaria, 606 for syphilis, and diphtheria antitoxin.

Of course, it is possible that some single drug or chemical which is very high in price at present may be the only one that will answer the purpose in a certain case, but such instances will be few, and when they occur it will, of course, be necessary

* Read at the Philadelphia Branch of the American Pharmaceutical Association, March 14, 1916.

to meet the market price of the article if it is obtainable, as is done in many cases at present when it is really unnecessary to go to such expense.

Our materia medica is such a large one and the armamentarium of most physicians is so small, comparatively, that we should find little trouble in adjusting things in some satisfactory way to tide us over the era of high prices.

No doubt if this matter is discussed in meetings such as these, numerous ideas will be brought out along the line suggested. The purpose of this paper is to present one phase of the matter which occurred to the writer a short time ago, namely: that many physicians have become so accustomed to writing for active principles of drugs when galenical preparations of the same will answer the purpose just as well, and perhaps better. It might be well to bring to their attention the fact that very many active principles have been made abroad and are not only high in price, but may soon be unobtainable, and that it is advisable to use galenicals wherever they can satisfactorily replace active principles.

A comparison of the percentage of increase in a few active principles and drugs, based on a comparison of prices obtaining about March 1, 1916, and June 1, 1914, might be of interest at this point.

It must be borne in mind, however, that all price comparisons are more or less uncertain at this time and the lapse of a few weeks, or even days, may make an enormous difference in the price quoted for an article.

Granulated opium has increased 48 percent, morphine 16 percent, codeine 10 percent, cinchona 40 percent, quinine 180 percent, coca 20 percent, cocaine hydrochloride 45 percent, nux vomica 33 percent, strychnine 67 percent, aconite 59 percent, aconitine 40 percent, belladonna 350 percent, and atropine 1000 percent.

These are only a few examples, and while they may not appeal to you as particularly striking in some instances, we must remember, that, with a few exceptions, the crude drug stocks in this country at present are used to a much greater extent for manufacturing galenicals than for extracting active principles. There is, therefore, more danger of a shortage of alkaloids than of drug preparations. The danger of shortage of galenicals is still further minimized by the fact that such drugs as belladonna, digitalis, cannabis, hydrastis, etc., have been grown in the United States in the past year in sufficient amounts to supply the requirements for extracts, fluidextracts, tinctures, and other preparations of these drugs, and it is safe to predict that during the coming summer the efforts expended in cultivating medicinal plants on this side of the water will be greater and more successful than was the case last year.

There was a time in the history of medicine and pharmacy—and it is not so far back—when active principles isolated from vegetable drugs were practically unknown. In those days tinctures, extracts, infusions, etc., were used exclusively when drug preparations were desired, and they produced results.

When one after another so-called active principle of the more common drugs was isolated and found to give satisfactory results, physicians naturally turned to this form of medication, and it certainly has its place in the modern materia medica.

In spite of the fact, however, that active principles of all the important drugs were obtainable just previous to the war, galenical preparations were by no means discarded. Many physicians feel that a single active constituent does not represent the curative property of a drug. Tincture of cinchona, for instance, is preferred in treating some conditions to the alkaloid quinine, which is really only one of several active constituents of cinchona bark. Likewise, tincture of opium and tincture of nux vomica are given preference to any single alkaloid obtained from these drugs in the treatment of certain ailments, and so it is with many others.

It is interesting in this connection to repeat the words of Professor A. Tschirch, of the University of Berne, which follow:

Under the influence of the successes of the modern synthesis of medicaments, and the understood theory of the so-called active principle, we have been gradually abandoning drugs, in spite of experiments carried on for hundreds of years. Many physicians have already disaccustomed themselves to the use of drugs. But they cannot be replaced, and the wish that I expressed in London, in 1909, "Let us go back to drugs," found an echo much sooner than I expected, and in more extended circles than I had dared hope.

How can one replace rhubarb by a solution of emodin, ipecac by emetine, opium by morphine, digitalis by digitoxin, ergot by ergotoxine or by the interesting bases isolated by Barger and Dale, which, according to the recent experiments of Kehrer, do not even act on the uterus? Emodin, emetine, quinine, digitoxin, and morphine are pharmacological individuals, different from the drugs themselves, and should be numbered among remedies not to replace the drugs, but to stand beside them.

Since we know that there is in the drug a dominant principle, but that the effect is not produced by this principle alone, we are more than ever obliged to make a profound chemical study of the drug in all of its elements.

There has sprung into existence a school of "Alkalometry" or "Active-Principle Therapeutics," whose maxim is, "The smallest possible quantity of the best obtainable means to produce a desired therapeutic result."

We accept this maxim without becoming "dyed-in-the-wool" alkalometrists, for our object is to bring to the attention of the physician just what is the "best obtainable means," at this time, of producing "a desired therapeutic result."

The great objection to galenical preparations voiced by alkalometrists is that galenicals are not dependable because of the variation in active-principle content of drugs, and because of the deterioration of vegetable preparations. Modern methods of drug cultivation, manufacture, assay, standardization, and preservation overcome this objection in a large measure, if not entirely. When a vegetable drug is assayed, both chemically and physiologically, by reliable methods and skilled workers, one may rest assured that the strength of that drug is known, and when such a drug is used to make a tincture, fluidextract, or extract, and the resulting product is again assayed, chemically and physiologically, one may be assured that something is known of the strength of the finished product. Modern pharmaceutical methods carry us still farther, however, for we are not satisfied with knowing the strength of a preparation, but we adjust its strength to standards given in the Pharmacopœia or otherwise recognized, and then the physician who prescribes a dose of 10 minims of a standardized tincture, or 1 grain of a standardized powdered extract, knows just exactly how much active principle his patient will receive.

The rate of deterioration of galenical preparations is not nearly as great as some alkalometrists would have us believe. We know that fluidextract of ergot, tincture of digitalis, and strophanthus deteriorate under ordinary laboratory conditions, but this deterioration can be minimized in the first place by putting up the finished products in small containers so as to avoid frequent opening of a large container, and can be avoided entirely if air, which has been shown to be the cause of the deterioration in these preparations, is removed, both from the preparation and the container, by putting them up in ampoules and sealing them under a good vacuum. This matter was discussed fully in a paper by Pittenger and Vanderkleed, read at the meeting of the Pennsylvania Pharmaceutical Association, in June, 1912.

Another objection to the use of galenicals that is advanced occasionally is that their taste is unpleasant. This objection offers an excellent opportunity for the

pharmacist to use his professional skill in compounding. He can suggest suitable adjuvants, diluents, and flavoring agents to disguise the taste of tinctures. He can recall to the mind of the doctor that the doses of fluidextracts are so small that it is often convenient to incorporate them into a pill mass, and that this mass can either be divided and enclosed in capsules, or can be divided and rolled into pills which can be coated to preserve them until used.

Lastly, we must not forget that standardized powdered extracts of drugs give very satisfactory results, and, mixed with sugar of milk, or some other diluent, they can be put up into capsules just as easily as active principles can be similarly dispensed.

Of course, galenicals cannot replace active principles for hypodermic use, and in cases where the crude drug is scarce or commands exorbitant prices, it may be advantageous to use the active principle for oral administration also. Taken on the whole, however, the writer believes it would be of considerable advantage to recommend to physicians that they prescribe galenicals wherever possible, in place of the active principles of drugs, at least for the time being.

If the suggestion, that physicians and pharmacists coöperate in the matter of adjusting the use of drugs to meet present conditions, is to be of any practical value it must for obvious reasons be brought to the attention of the medical practitioner. This can be done in the joint meeting of pharmacists and physicians which, I understand, is being arranged by the officers of this Branch. Perhaps a surer way of reaching the majority of physicians would be to prepare a list of drugs and chemicals similar to the " Index of Diseases " of the U. S. Dispensatory, and using distinctive marks after each drug named to indicate whether it is high in price, fair in price, scarce, or unobtainable in our market.

Another method would be to group the drugs according to their therapeutic effects. The following example will serve to illustrate this plan:

Analgesics:

	F.	H.	S.	U.
Opium	....	....	....	....
Morphine	....	....	....	....
Belladonna	....	....	....	....
Atropine	....	....	....	....
Cannabis Indica, etc.	....	....	....	....

F., fair in price; H., high in price; S., scarce; U., unobtainable.

Perhaps an alphabetical list of drugs and their preparations with columns provided for giving the information outlined above would, in the end, be most satisfactory. Prepared in this way, such a list could be used for making notations as changes occur in the drug market from time to time, and the physician could thus keep himself posted with reference to drug prices.

The pharmacist must naturally bear the brunt of the high-price situation, and it is desirable to seek as much relief from the tension as possible. The public is being educated to the necessity of paying more for medicines through the excellent monthly press bulletins issued by the publicity committee of the Pennsylvania Pharmaceutical Association. Let us go a step further now and seek the coöperation of the physician in making the best of the situation, to our own interest, as well as to the interest of the physician and the public.

NOTE ON TESTING CALCIUM COMPOUNDS.

BY CARL E. SMITH.

This is written to draw attention to a deficiency in the tests of the United States Pharmacopœia for the identification of calcium compounds and for the detection of certain possible contaminations, such as might easily lead to serious results because of the false sense of security the official tests would give. As an example, it might be mentioned that a specimen of strontium carbonate containing several percent of barium carbonate will stand all the tests given in the U. S. P. for establishing the identity and purity of precipitated calcium carbonate.

A sample of powder was recently submitted to the writer for analysis, which, because of a statement accompanying it concerning its uses, was supposed to consist, in greater part at least, of calcium salts. Preliminary tests proved presence of alkaline earth carbonate in large quantity. This led to the tentative conclusion that the powder probably consisted chiefly of calcium carbonate, as there was no reason to suspect presence of barium or strontium salts. Absence of color and complete solubility in dilute acids excluded the presence of elutriated native chalk. It was therefore expected that the U. S. P. tests laid down for precipitated chalk would definitely establish its identity as such and also detect in great probability any impurity or admixture. The sample stood all the tests and conformed also to the description of physical properties given. A little sodium chloride and traces of iron were found and as the U. S. P. lacks a test for magnesia, which is often found in calcium salts to some extent, a test was made in the usual way with phosphate, and a reaction was obtained that apparently indicated presence of a small amount of that impurity. Dependence on the U. S. P. tests, therefore, would have led to the conclusion that the specimen in question not only was calcium carbonate, but a salt of such a degree of purity as to warrant its use in medicinal preparations.

Further examination, however, showed that the sample was *not* calcium carbonate, that it contained neither calcium nor magnesium, but consisted of strontium carbonate contaminated with about 1.5 percent of barium carbonate.

The test upon which the Pharmacopœia relies entirely for the identification of calcium salts is the production of a precipitate on addition, to the neutral solution, of a solution of ammonium oxalate, said precipitate to be soluble in hydrochloric acid, but insoluble in acetic acid. But this reaction is by no means characteristic of calcium alone. It is shared by strontium and to some extent by barium and neither of these latter is excluded or detected by any other test provided. It is true that calcium salts are not liable to contain either barium or strontium as natural impurities, nor are these liable to be introduced in the course of manufacture, but accidental substitution or admixture might readily take place and such contingencies should certainly be guarded against by suitable means.

Examination of the text of the U. S. P. pertaining to other calcium salts show that in no case do the tests adequately differentiate calcium from other alkaline earth compounds. A test for the identification of a substance should be characteristic enough to distinguish it from everything else, beyond all reasonable doubt.

Of course, the remedy for the defects pointed out in this note is self-evident to every competent analyst. It need only be mentioned that a saturated water solution of calcium sulphate would seem to be the simplest means of detecting the presence of either barium or strontium.

CARL E. SMITH TESTING AND RESEARCH LABORATORY, 5 Beekman Street, New York.

PHARMACOPŒIAL BOTANIC DRUGS OF THE TWENTIETH CENTURY*

By E. N. Gathercoal

Latin plant names	English names	Austrian	Belgian	British	Croatian	Danish	French	German	Hungarian	Italian	Japanese	Mexican	Netherlands	Norwegian	Russian	Servian	Spanish	Swedish	Swiss	U. S. P. VIII	U. S. P. IX
191. **Elaphrium tomentosum, res**	Tacamahaca																X				
192. **Elettaria Cardamomum, ft**	Cardamon	X			X	X		X	X		X	X	X	X	X	X		X	X	X	
193. **Elettaria Cardamomum, s**	Cardamon Seed			X																	X
194. **Embelia Ribes, ft**				X																	
195. **Equisetum arvense, ster. hb**	Scouring Rush	X							X												
196. **Erigeron Canadense, v. o. fm. hb**	Oil of Fleabane																			X	
197. **Eriodictyon Californicum, lv**	Yerba Santa																			X	X
198. **Erythræ Centaurium, fl. hb**	Centaury	X	X		X		X	X	X	X			X		X	X	X		X		
199. **Erythræa Chilense, hb**																	X				
200. **Erythronium Dens-canis, stch. rt**	Adder's Tongue Starch										X										
201. **Erythroxylon Coca, lv**	Coca Leaves						X	X		X	X	X					X		X	X	
202. **Eucalyptus globulus, lv**	Eucalyptus		X		X		X			X	X	X	X			X	X		X	X	X
203. **Eucalyptus globulus, v. o**	Oil of Eucalyptus			X	X		X		X	X	X	X					X			X	X
204. **Eucalyptus rostrata, g**	Red Gum			X																	
205. **Eugenia caryophyllata, fl. bd**	Cloves	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
206. **Eugenia caryophyllata, v. o**	Oil of Cloves			X	X	X	X	X	X	X	X	X	X		X	X	X		X	X	X
207. **Eugenia Jambolana, bk**	Jambul												X								
208. **Eugenia Jambolana, s**	Java Plum												X								
209. **Euonymus atropurpureus, rt. bk**	Wahoo			X			X													X	X
210. **Eupatorium perfoliatum, fl. hb**	Boneset																			X	
211. **Euphorbia resinifera, i. m. j**	Euphorbium	X	X		X	X	X	X	X	X		X		X	X	X		X	X		
212. **Exogonium purga, tu**	Jalap	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
213. **Fagus sylvatica, emp. o**	Beechwood Tar	X			X				X				X								
214. **Ferula species, g. res**	Asafœtida	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
F. Asafœtida						X	X	X			X	X	X	X			X	X	X		X
F. fœtida				X				X					X					X	X	X	X
F. Narthex		X	X				X	X		X	X	X		X	X		X	X	X		
F. Scorodosma		X	X							X					X						
215. **Ferula species, g. res**	Galbanum	X	X			X	X	X		X	X	X	X	X	X		X	X	X		
F. galbaniflua		X	X			X	X	X		X		X	X	X	X		X	X	X		
F. rubricalis		X	X								X	X		X	X						
216. **Ferula species, rt**	Sumbul											X								X	X
F. Sumbul												X									
217. **Ficus Carica, ft**	Figs																			X	
218. **Fœniculum vulgare, ft**	Fennel	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
219. **Fœniculum vulgare, v. o**	Oil of Fennel	X	X		X	X		X	X		X		X	X	X	X			X	X	X
220. **Fœniculum vulgare, lv**	Fennel Leaves						X														
221. **Fœniculum vulgare, rt**	Fennel Root						X			X								X			
222. **Fragaria vesca, ft**	Strawberries											X						X			
223. **Fragaria vesca, rh. & rt**	Strawberry Root											X						X			

*Continued from page 293, March issue.

*Continued from page 293, March issue.

224. Fraxinus Ornus, sacch. exud.	Manna	×	×	.	.	×	×	×	×	×	×	×	.	.	×	×	×	×	×	×	×	×
225. Fumaria officinalis, hb.	Fumitory	.	.	.	.	.	×	.	.	×	×	×	.	.	.	.	.	×	.	.	.	.
226. Galeopsis ochroleuca, fl. hb.	Galeopsis	×	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
227. Garcinia Hanburyi, g. res.	Gamboge	×	×	.	.	.	×	×	.	×	×	×	.	.	.	.	.	×	×	×	×	×
228. Gaultheria procumbens, v. o. lv.	Oil of Wintergreen	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	×	.
229. Gelidium species, mu.	Agar	.	.	.	.	.	×	.	.	.	×	.	.	.	×	.	.	.	.	.	.	×
230. Gelsemium sempervirens, rh. & rt.	Yellow Jasmine	.	.	×	.	.	.	.	.	×	×	.	.	.	.	.	.	.	×	×	×	×
231. Gentiana species, rh. & rt.	Gentian	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
G. lutea		×	×	×	.	×	×	×	×	×	×	×	×	×	×	.	×	×	×	×	×	×
G. Pannonica		×	.	.	.	×	.	×	×	.	×	.	.	×	×	.	.	.	.	.	.	.
G. punctata		.	.	.	.	×	.	×	×	.	×	.	.	.	×	.	.	.	.	.	.	.
G. purpurea		.	.	.	.	×	.	×	×	.	×	.	.	×	×	.	.	.	.	.	.	.
232. Gentiana scabra, rt.	Japanese Gentian	.	.	.	.	.	.	.	.	.	×	.	.	.	.	.	.	.	.	.	.	.
233. Geranium maculatum, rh.	Cranesbill	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	×	.
234. Geum urbanum, rh. & rt.	Water-avens	.	.	.	.	×	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
235. Gigartina mamillosa, th.	Irish Moss	×	×	.	.	×	.	×	.	.	×	.	×	.	.	.	.	×	.	×	×	×
236. Glecoma hederacea, lv. or hb.	Ground Ivy	.	.	.	.	.	×	.	.	.	.	.	.	.	.	.	.	×	.	.	.	.
237. Glycyrrhiza glabra, rh. & rt.	Spanish Licorice	×	×	×	×	.	×	×	.	×	.	×	×	.	.	×	×	.	.	×	×	×
238. Glycyrrhiza glabra, var glandulifera	Russian Licorice	×	.	.	×	×	×	.	×	.	×	.	×	×	×	×	.	×	×	×	×	×
239. Gossypium species, s. h. cl.	Purified Cotton	×	×	×	×	.	×	×	×	×	×	×	×	.	×	×	×	×	×	×	×	×
240. Gossypium species, f. o. s.	Cotton Seed Oil	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	×	×
241. Gossypium species, rt. bk.	Cotton Root Bark	.	.	×	.	.	.	.	.	.	×	.	.	.	.	.	.	.	.	.	×	.
G. arboreum		.	.	.	.	.	.	.	.	.	×	.	.	.	.	.	.	.	.	.	.	.
G. anomalum		.	.	.	.	.	.	.	.	.	×	.	.	.	.	.	.	.	.	.	.	.
G. Barbadense		×	.	.	.	.	.	.	.	.	×	.	.	.	×	.	.	.	.	.	.	.
G. herbaceum		×	.	×	.	.	.	.	.	.	×	.	.	.	×	.	×	.	.	.	×	×
G. hirsutum		.	.	.	.	.	.	.	.	.	.	.	.	.	×	.	.	.	.	.	.	.
242. Grindelia species, lv. & fl. tp.	Grindelia	.	.	×	.	.	×	.	.	.	×	.	.	.	×	.	.	.	.	.	×	×
G. camporum		.	.	×	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	×
G. cuneifolia		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	×
G. robusta		.	.	.	.	.	×	.	.	.	×	.	.	.	×	.	.	.	.	.	×	.
G. squarrosa		.	.	.	.	.	.	.	.	.	×	.	.	.	.	.	.	.	.	.	×	×
243. Guaiacum officinale, ht. wd.	Lignum Vitæ	×	.	×	.	.	.	×	.	×	×	×	.	×	×	.	×	.	×	.	.	.
244. Guaiacum officinale, res.	Guiaic	×	.	×	×	.	×	.	.	×	×	×	.	.	.	×	×	×	×	×	×	×
245. Gynocardia odorata, f. o. s.	Chaulmoogra Oil	.	.	.	.	.	.	.	.	.	×	×	.	.	.	.	.	.	.	.	.	.
246. Hæmatoxylon Campeachianum, ht. wd.	Logwood	×	.	×	.	.	.	.	.	.	×	.	.	.	.	.	.	.	.	.	×	.
247. Hagenia Abyssinica, pistil. infl.	Cusso	×	×	×	×	.	×	×	×	×	×	×	.	.	×	.	×	×	×	×	.	.
248. Hamamelis Virginiana, bk.	Witchhazel Bark	.	.	×	.	.	.	.	.	.	×	.	.	.	.	.	×	.	.	.	×	.

192. U. S. P. VII—E. repens.
193. U. S. P. IX—E. repens.
194. British—also from E. robusta.
198. Austrian—Centaurium minor.
203. Belgian, Norwegian, Swedish and Swiss recognize eucalyptol instead of volatile oil.
205. Belgian—Caryophyllus aromaticus; German and Swiss—Jambosa caryophyllus; Hungarian and U. S. P. VII and IX—E. aromatica.
206. Austrian, Belgian, Norwegian and Swedish recognize eugenol in place of volatile oil.
212. Belgian, British, Italian, Netherlands, Russian and Servian—Ipomea purga.
218. Danish—F. capillaceum; Russian—F. officinale.
224. Netherlands recognize mannite in place of manna.
227. Belgian and Spanish—G. morellæ.
228 U. S. P. IX—replaced by methyl salicylate.
229. U. S. P. IX—also from species of Gracilteria and Gloiopeltis.
230. British—from G. nitidum.
243. British, German, Italian, Norwegian and Swiss—also from G. sanctum.
244. British, Italian and U. S. P. VII and IX—also from G. sanctum.
247. British—Brayera anthelmintica.

Latin plant names	English names	Austrian	Belgian	British	Croatian	Danish	French	German	Hungarian	Italian	Japanese	Mexican	Netherlands	Norwegian	Russian	Servian	Spanish	Swedish	Swiss	U. S. P. VIII	U. S. P. IX
249. Hamamelis Virginiana, lv	Witchhazel Leaves	X	X	X			X			X	X	X		X			X	X	X	X	
250. Hedeoma pulegioides, fl. hb	Pennyroyal											X								X	
251. Hedeoma pulegioides, v. o	Oil of Pennyroyal																			X	
252. Helleborus niger, rh	Black Hellebore		X									X									
253. Herniaria glabra, fl. hb		X														X					
254. Hevea species, coag. milk-juice	Caoutchouc	X					X	X	X		X	X	X				X	X	X	X	
H. Braziliensis		X					X		X									X			
H. guyanensis		X										X					X				
255. Hibiscus japonicus, rt											X										
256. Hordeum vulgare, decorticated ft	Pearl Barley						X						X				X				
257. Hordeum vulgare, malted ft	Malt																			X	X
258. Humulus Lupulus, stro	Hops						X					X					X			X	X
259. Humulus Lupulus, gland, hairs	Lupulin	X								X		X	X						X	X	
260. Hydrastis Canadensis, rh. & rt	Goldenseal	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
261. Hydrocotyle Asiatica, lv	Indian Pennywort											X	X				X				
262. Hyoscyamus niger, lv	Henbane	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
263. Hyoscyamus niger, s	Henbane Seed					X	X					X					X				
264. Hypericum perforatum, fl. hb	St. John's Wort				X		X					X				X	X				
265. Hyssopus officinalis, fl. hb	Hyssop						X										X	X			
266. Illicium verum, ft	Star Anise	X					X		X	X					X			X	X		
267. Illicium verum, v. o	Oil of Anise			X			X													X	X
268. Inula Helenium, rt	Elecampane											X	X								
269. Ipomœa hederacea, s	Pharbitis Seed			X																	
270. Ipomœa orizabensis, rt	Mexican Scammony			X																	
271. Ipomœa Turpethum, rt. & st	Turpeth			X			X					X					X				
272. Iris Florentina, I Germanica and I pallida, rh	Orris	X	X			X		X	X	X	X	X	X		X			X	X		
273. Jateorrhiza palmata, rt	Calumba	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X
274. Juglans regia, lv	Walnut Leaves	X	X					X				X					X		X		
275. Juniperus communis, ft	Juniper Berries	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
276. Juniperus communis, v. o	Oil of Juniper	X		X	X		X	X	X	X	X			X		X			X	X	X
277. Juniperus communis wd. rt		X																			
278. Juniperus oxycedrus, empy. o	Oil of Cade	X		X	X	X			X	X	X		X	X	X	X	X	X	X	X	X
279. Juniperus Sabina, tp	Savin	X	X		X	X	X		X	X		X	X						X	X	
280. Juniperus Sabina, v. o	Oil of Savin		X								X								X		
281. Krameria triandria, rt	Rhatany, Peruvian	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
282. Lactuca virosa, i. m. j	Lactucarium								X			X	X				X			X	X
283. Lactuca sativa, hb	Lettuce											X					X				
284. Laminaria Cloustonii, ths	Sea-weed Tents																X				
285. Larix decidua, olres	Venice Turpentine		X		X	X	X		X	X			X	X	X		X	X	X		
286. Laserpitium Siler, ft																	X				

287. Laurus nobilis, ft	Bayberries	×	×				×	×		×		×			×		×						
288. Laurus nobilis, f. o. ft	Oil of Laurel	×	×		×			×	×	×	×	×	×	×	×	×			×				
289. Laurus nobilis, lv	Bay Leaves											×					×						
290. Lavendula vera, fl	Lavender Flowers	×	×			×		×			×	×		×	×				×				
291. Lavendula vera, fl. tp	Lavender Herb						×			×							×						
292. Lavendula vera, v. o	Oil of Lavender	×	×	×	×	×	×	×	×	×	×		×	×	×	×	×	×	×	×	×	×	×
293. Leonurus lanatus, hb	Motherwort								×														
294. Levisticum officinale, rh. & rt	Lovage						×													×			
295. Linum usitatissimun, s	Linseed	×	×	×	×		×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
296. Linum usitatissimun, gr. s	Linseed Meal		×	×			×						×					×					
297. Linum usitatissimun, f. o	Linseed Oil	×	×	×	×	×		×	×	×	×		×	×	×	×	×	×	×	×	×	×	×
298. Linum usitatissimun, pressed cake	Flaxseed Cake	×					×																
299. Liquidamber orientalis, balsm	Storax	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
300. Lobelia inflata, fl. hb	Indian Tobacco	×	×	×	×	×	×	×	×	×	×	×	×		×		×	×	×	×	×	×	×
301. Lycopodium clavatum, spo	Lycopodium	×	×		×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
302. Mallotus Philippinensis, gland. hairs	Kamala	×			×			×	×	×	×	×			×			×	×					
303. Malva sylvestris, lv. or hb	Mallow Leaves	×			×			×	×	×		×		×			×		×				
304. Malva sylvestris, fl	Mallow Flowers	×	×				×	×	×	×	×				×	×	×		×				
305. Manihot utilissima, stch. tu	Tapioca												×	×									
306. Maranta arundinacea, stch. tu	Bermuda Arrowroot		×			×							×	×									
307. Marrubium vulgare, fl. hb	Horehound												×							×			
308. Marsdenia Condurango, bk	Condurango	×	×		×	×	×	×	×		×	×	×	×	×	×	×	×	×				
309. Matricaria chamomila, fl. hd	German Chamomile	×			×	×		×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
310. Matricaria chamomila, v. o	Oil of Chamomile									×										×			
311. Melaleuca Leucadendron, v. o. lv	Oil of Cajaput	×		×						×	×		×		×		×		×	×	×	×	×
312. Melilotus officinalis, fl. hb	Sweet Clover	×					×		×		×				×								
313. Melissa officinalis, lv	Balm	×	×		×			×	×		×					×			×				
314. Melissa officinalis, fl. hb	Balm					×	×			×				×			×						
315. Melissa officinalis, v. o	Oil of Lemon Balm		×																				
316. Mentha arvensis, var. piperascens, lv	Japanese Peppermint										×												
317. Mentha arvensis, var. piperascens, v. o	Oil of Peppermint										×												
318. Mentha crispa, v. o. lv	Oil of Curled Mint			×											×								
319. Mentha piperita, lv. & fl. tp	Peppermint	×	×		×	×	×	×	×	×		×	×	×	×	×	×	×	×	×	×	×	×
320. Mentha piperita, v. o. hb	Oil of Peppermint	×	×	×	×	×	×	×	×	×		×	×	×	×	×	×	×	×	×	×	×	×
321. Mentha viridis, lv. & fl. tp	Spearmint											×									×	×	×
322. Mentha viridis v. o. hb	Oil of Spearmint			×																	×	×	×
323. Menyanthes trifoliata, lv	Bogbean Leaves	×			×	×	×	×	×		×		×	×	×	×	×	×	×				
324. Mercurialis annua, fl. hb							×																
325. Minusops Balata, coag. milk juice	Balata Gum												×										
326. Morus nigra, fr. ft	Mulberry						×					×					×						

253. Austrian and Servian—also from H. hirsuta.
257. U. S. P. VIII—H. distichon.
266. Italian—I. anisatum.
273. Austrian, British, Mexican and Netherlands—J. Calumba; French and Spanish—Chasmanthera palmata; Belgian—Cocculus palmata.
281. British and U. S. P. VIII—also from K. argentea (Para Rhatany) and U. S. P. VIII, also from K. Ixina (Savanilla Rhatany).
282. Spanish and Mexican—also from L. altissima.
285. Belgian, Italian, Netherlands, Russian and Spanish—L. Europæa.
286. Spanish—also from L. latifolium.
290. German and Swiss—L. spica; Austrian and U. S. P. VIII—L. officinalis.
303. Austrian, Norwegian and Spanish—also from M. vulgaris; Swiss—also from M. neglecta; Italian—also from M. Niceensis.
308. Belgian, French, Mexican and Spanish—Gonolobus Condurango.
311. Swiss—M. minor.
312. German—also from M. altissimus.

Latin plant names	English names	Austrian	Belgian	British	Croatian	Danish	French	German	Hungarian	Italian	Japanese	Mexican	Netherlands	Norwegian	Russian	Servian	Spanish	Swedish	Swiss	U. S. P. VIII.	U. S. P. IX.
327. Musa species, lv. wax	Cera Pisang												X								
328. Myristica fragrans, s. kl	Nutmeg	X	X	X	X		X	X	X	X	X	X	X		X	X	X	X	X	X	X
329. Myristica fragrans, v. o	Oil of Nutmeg		X	X							X									X	X
330. Myristica fragrans, f. o	Nutmeg Butter	X					X	X					X						X		
331. Myristica fragrans, seed arillus	Mace	X					X					X			X						
332. Myristica fragrans, v. o	Oil of Mace	X			X			X					X		X	X			X		
333. Myrtus communis, ft	Myrtle Fruit																X				
334. Myrtus communis lv	Myrtle Leaves																X				
335. Nasturtium officinale, fr. hb	Water Cress						X					X					X				
336. Nicotiana Tabacum, lv	Tobacco											X					X				
337. Nyssa silvatica, wd	Tupelo Tents																X				
338. Ocinum Basilicum, fl. hb							X					X									
339. Olea Europæa, f. o. ft	Olive Oil	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
340. Ononis spinosa, rh. & rt	Rest Harrow	X			X			X	X							X			X		
341. Orchis species, tu	Salep	X	X		X			X	X	X	X	X	X	X	X	X		X	X		
342. Origanum dictamnus, fl. tp	Cretan Dittany						X					X					X				
343. Origanum majorana, fl. tp	Marjoram	X					X			X		X	X				X		X		
344. Origanum vulgare, fl. tp	Wild Marjoram	X				X	X					X		X	X		X				
345. Orthosiphon stamineus, lv													X								
346. Oryza sativa, ft	Rice						X														
347. Oryza sativa, stch fm. s	Rice Starch	X	X	X				X					X						X		
348. Ourouparia Gambir, ext. lv	Gambir			X							X		X							X	X
349. Palaquium species, coag. milk-juice	Gutta Percha			X	X		X	X			X		X			X	X	X	X		
350. Papaver Rhœas, pet	Red Poppy Petals	X	X	X			X					X	X				X		X		
351. Papaver somniferum, c. i. m. j	Opium	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
352. Papaver somniferum, unr, ft	Poppy Capsules	X	X		X	X	X		X			X	X		X	X	X		X		
353. Papaver somniferum, lv	Poppy Leaves						X														
354. Papaver somniferum, s	Poppy Seed							X							X						
355. Papaver somniferum, f. o	Poppyseed Oil						X														
356. Paronychia argentea, fl. tp																					
357. Paullinia cupana, paste of seeds	Guarana	X							X			X					X		X	X	X
358. Petroselinum sativum, ft	Parsley Fruit																	X	X		X
359. Petroselinum sativum, v. o	Oil of Parsley					X								X							
360. Petroselinum sativum, rt	Parsley Root	X					X										X				
361. Peucedanum graveolens, ft	Dill			X																	
362. Peucedanum graveolens, v. o	Oil of Dill			X																	
363. Peumus Boldus, lv	Boldo Leaves											X					X				
364. Phellandrium aquaticum, ft	Phellandrum									X							X				
365. Physalis Alkekengi, ft	Winter Cherry						X														
366. Physostigma venenosum, s	Calabar Bean		X								X	X					X			X	X

367. Phytolacca acinosa, var. esculenta, rt	Jap. Poke Root											×													
368. Phytolacca decandra; rt	Poke Root												×											×	
369. Picræna excelsa, htwd	Quassia		×	×			×	×		×	×	×	×	×	×	×		×			×	×		×	×
370. Picrorhiza Kurroa, rh				×																					
371. Pilocarpus species, lf	Jaborandi	×	×				×				×	×					×	×			×	×		×	×
P. Jaborandi	Pernambuco J	×					×										×				×	×		×	×
P. microphylliss	Maranham J																							×	×
P. pennatifolius	Rio Jaborandi		×				×					×						×							
372. Pimenta officinalis, ft	Allspice											×						×						×	
373. Pimenta officinalis, v. o	Oil of Allspice																							×	×
374. Pimpinella Anisum, ft	Anise	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
375. Pimpinella Anisum, v. o	Oil of Anise			×	×	×	×	×	×	×		×	×	×	×	×	×		×	×	×	×	×	×	×
376. Pimpinella Saxifraga, rh. & rt	Saxifrage					×		×						×					×	×					
377. Pinites succinifera, fossil res	Amber											×	×												
378. Pinites succinifera, emp. oil	Oil of Amber													×											
379. Pinus species, olr	Turpentine	1,2 3	1		×	1,4	4	1	1,2 3,4 10	1-6	1	1		1	2	×	1,2 11	1,3 4	4	1,6					
380. Pinus species, v. o	Oil of Turpentine	1,2 3	1	1	×	1	4	1	×	1-6	1		1-5 6	1	2	×	1	1,3 4	4	1,6					
381. Pinus species, res	Rosin	1,2 3	1	1	×	1,4	4	1	1	1-6	1	1	1	1	1	×	1,2 11	1	1,6	1,6	1,6				
382. Pinus species, emp. o. fm. res		1,2 3				1					×							1,2							
383. Pinus species, emp. prod. fm. wd	Liquid Tar		1	1,2		1	1	1,2		1-6	1	1,2	1	1	1	×	1,2 11	1,2	1	1,6	1,6				
384. Pinus species, emp. prod. fm. wd	Solid Tar						1						1		1										
385. Pinus species, v. o. fm. tar	Oil of Tar					1								1				1		1,6					
386. Pinus species, pf. olr	Burgundy Pitch		1		×				4		1				1				4						
387. Pinus species, v. o. lv	Oil of Pine Needles	7		9	×				2	1,2 3,4					2	×			8		9				
388. Pinus species, young sprouts							2			×					2		1,2		2						
(1) Pinus species																									
(2) Pinus sylvestris																									
(3) Pinus Laricio																									
(4) Pinus Pinaster																									
(5) Pinus Tæda																									
(6) Pinus palustris																									
(7) Pinus pumilio																									
(8) Pinus montana, var. pumilio																									

343. Austrian and Swiss—Majorana hortensis.
348. British—Uncaria Gambir.
349. Also from Payena species.
357. Austrian and Spanish—P. sorbilis.
360. Austrian—Carum Petroselinum.
369. German, Japanese, Norwegian and U. S. P.—Picrasma excelsa; Japanese—also from Picrasma quassoides.
375. Austrian, Belgian, Japanese and Swedish recognize anethol in place of the volatile oil.
376. Also from P. magna.

(*To be continued.*)

PHARMACEUTICAL FORMULAS

PROPOSED FOR A. PH. A. RECIPE BOOK

Thus far a collection of 114 Pharmaceutical Formulas has been compiled and published in THE JOURNAL, Vol. I, pp. 169, 366, 505, 637, 760 and 1307 (Feb. to Nov. 1912). Beginning with the March 1916 number these Formulas will be continued in monthly instalments by the Committee, and *all* members of the American Pharmaceutical Association are earnestly requested to render assistance by sending suitable formulas and criticisms to the Chairman,

OTTO RAUBENHEIMER, Brooklyn, N. Y.

No. 128.

LIQUID SODA SOAP.

Cottonseed Oil	300 mils
Sodium Hydroxide	45 Gm.
Alcohol	200 mils
Distilled Water	350 mils

Dissolve the sodium hydroxide in 50 mils of distilled water; as soon as solution has taken place immediately add all of the oil and 50 mils of the alcohol, and stir vigorously until saponification has taken place; allow to stand 15 minutes, then add remainder of the alcohol, stir well, and then the remainder of the distilled water.

(German Hospital, Philadelphia.)

No. 129.

BITTER WATER.

Magnesium Sulphate	600 Gm.
Sodium Sulphate	500 Gm.
Potassium Sulphate	3 Gm.
Sodium Chloride	45 Gm.
Sodium Bicarbonate	20 Gm.
Diluted Sulphuric Acid	10 mils
Water, a sufficient quantity,	
To make	8000 mils

(German Hospital, Philadelphia.)

No. 130.

CINNAMOL TABLETS.

ALKALINE ANTISEPTIC TABLETS.

(Wilberts' Tablets.)

Sodium Bicarbonate	0.25 Gm.
Sodium Borate	0.25 Gm.
Sodium Chloride	0.25 Gm.
Sodium Phenolsulphonate	0.25 Gm.
Oil of Cinnamon	0.005 Gm.

Make into one tablet.

One tablet dissolved in six tablespoonfuls of clean water. Useful as a gargle and nasal douche.

(German Hospital, Philadelphia.)

DIAGNOSTICAL REAGENTS.

The U. S. P. IX contains an excellent chapter of Diagnostical Reagents and Clinical Tests. In addition, the following are proposed for the A. Ph. A. Recipe Book, as being in frequent demand. Very often the authentic formulas are difficult to find, and it is for this reason that such reagents should be included in the A. Ph. A. Recipe Book.

Contributed by J. Atlee Dunn:

Reagents for Examination of Urine.

FOR ALBUMIN REACTION.

No. 131.

HELLER'S REAGENT.

Nitric Acid U. S. P.

No. 132.

ROBERT'S REAGENT.

Nitric Acid U. S. P.	100 mils
Sat. Sol. Magnesium Sulphate	500 mils

No. 133.

TANRET'S REAGENT.

Mercuric Chloride	13.5 Gm.
Potassium Iodide	33.2 Gm.
Glacial Acetic Acid	5.0 mils
Distilled Water, a sufficient quantity,	
To make	1000 mils

No. 134.

SPIEGLER'S REAGENT.

Mercuric Chloride	8 Gm.
Tartaric Acid	4 Gm.
Glycerin	20 Gm.
Water	200 mils

No. 135.

SOLUTION SULPHOSALICYLIC ACID.

Sulphosalicylic Acid	20 Gm.
Distilled Water, a sufficient quantity,	
To make	100 mils

No. 136.

SOLUTION TRICHLORACETIC ACID.

Trichloracetic Acid	33 Gm.
Magnesium Sulphate	50 Gm.
Water, a sufficient quantity,	
To make	100 mils

No. 137.

OLIVER'S REAGENT.

Consists of equal volumes of the following two solutions:

Solution No. 1.

Citric Acid	50 Gm.
Distilled Water, a sufficient quantity,	
To make	100 mils

Solution No. 2.

Sodium Tungstate	25 Gm.
Distilled Water, a sufficient quantity,	
To make	100 mils

FOR SUGAR REACTIONS.

No. 138.

HAINES' SOLUTION.

Copper Sulphate	2 Gm.
Potassium Hydroxide	9 Gm.
Glycerin	20 Gm.
Distilled Water, a sufficient quantity,	
To make	175 mils

No. 139.

BARFOED'S REAGENT.

Copper Acetate	13.3 Gm.
Acetic Acid 38 percent	6.0 mils
Distilled Water, a sufficient quantity,	
To make	200 mils

No. 140.

PAVY'S REAGENT.

(Modified.)

Fehling's Solution A	60 mils
Fehling's Solution B	60 mils
Ammonia Water	300 mils
Sodium Hydroxide	50 Gm.
Distilled Water, a sufficient quantity,	
To make	1000 mils

No. 141.

RUDICHE'S REAGENT.

Copper Sulphate	4.17 Gm.
Sodium Sulphite, Crystals	50.00 Gm.
Sodium Carbonate, Crystals	80.00 Gm.
Ammonia Water, a sufficient quantity,	
To make	500 mils

No. 142.

PURDY'S REAGENT.

Copper Sulphate	4.752 Gm.
Glycerin	38.000 mils
Potassium Hydroxide	23.500 Gm.
Ammonia Water	350.000 mils
Distilled Water, a sufficient quantity,	
To make	1000 mils

Contributed by the Chairman:

No. 143.

BENEDICT'S VOLUMETRIC GLUCOSE REAGENT.

Copper Sulphate, C. P. Crystals	18 Gm.
Monohydrated Sodium Carbonate	100 Gm.
Sodium or Potassium Citrate	200 Gm.
Potassium Sulphocyanate	125 Gm.
Solution Potassium Ferrocyanide 5 percent	5 Gm.
Distilled Water, a sufficient quantity,	
To make	1000 mils

Dissolve the carbonate, citrate and sulphocyanate, with the aid of heat, in sufficient water to make about 800 mils, and filter this solution if necessary. Dissolve the copper sulphate in about 100 mils of water and pour this solution slowly and with constant stirring into the first solution. Add the ferrocyanide solution, cool, and dilute with water to exactly 1000 mils.

Of the various ingredients, the copper salt only need be weighed with exactness.

Twenty-five mils of Benedict's Reagent will reduce 50 milligrammes of Glucose.

(J. A. M. A., vol. 57 (1911), p. 1193.)

Reagents for the Analysis of Fæces.

No. 144.

CASEIN SOLUTION.

Casein	1 Gm.
Monohydrated Sodium Carbonate	1 Gm.
Chloroform	1 mil
Distilled Water, a sufficient quantity,	
To make	1000 mils

No. 145.

PHENOLPHTHALEIN BLOOD REAGENT.

Phenolphthalein	4 Gm.
Potassium Hydroxide	24 Gm.
Distilled Water, a sufficient quantity,	
To make	200 mils

Add 20 Gm. powdered zinc and boil until color is discharged, and filter.

Contributed by Prof. C. P. Wimmer:

No. 146.

LINIMENTUM ANODYNUM, MOTTII.

Mott's Anodyne Liniment.

Chloroform, Tincture of Aconite, Tincture of Iodine, Ammonia Water, of each	15 mils
Soap Liniment, a sufficient quantity,	
To make	120 mils

(Bellevue Formulary.)

No. 147.

LINIMENTUM ANODYNUM.

(Jacob's Oil.)

Hydrated Chloral, Camphor, of each	2 Gm.
Chloroform, Ether, of each	2 mils
Oil of Sassafras, Tinct. of Opium, of each	1 mil
Soap Liniment, a sufficient quantity,	
To make	120 mils

(Bellevue Formulary.)

No. 148.

INJECTIO ADSTRINGENS.

Lloyd's Astringent Injection.

Zinc Acetate, Lead Acetate, of each	0.4 Gm.
Comp. Solut. of Hydrastine (N. F. IV)	45.0 mils
Distilled Water, a sufficient quantity,	
To make	120 mils

(Bellevue Formulary.)

No. 149.

LIQUOR ANTISEPTICUS DEODORANS.

(Telephone Solution.)

Thymol	2 Gm.
Oil of Pine Needles, Oil of Peppermint, of each	2 mils
Alcohol	60 mils
Liniment of Soft Soap	30 mils
Water, a sufficient quantity,	
To make	1000 mils

This solution is used for scrubbing the mouthpieces of telephones.

(Bellevue Formulary.)

No. 150.

MISTURA NERVINA.

Hammond's Mixture. Vance's Mixture.

Strychnine Sulphate	0.06 Gm.
Quinine Sulphate, Ferric Phosphate, of each	8.00 Gm.
Diluted Phosphoric Acid	120.00 mils
Syrup of Ginger, a sufficient quantity,	
To make	240 mils

(Bellevue Formulary.)

No. 151.

MISTURA EXPECTORANS, TURNERII.

Turner's Expectorant.

Ammonium Chloride	8 Gm.
Extract of Glycyrrhiza	12 Gm.
Camphorated Tinct. of Opium	16 mils
Syrup of Squill	30 mils
Water, a sufficient quantity,	
To make	120 mils

(Bellevue Formulary.)

Contributed by I. A. Becker:

No. 152.

BICHLORIDE AND IRON GARGLE.

Mercuric Chloride	0.03 Gm.
Tincture of Iron, Glycerin, of each	30.00 mils
Water, a sufficient quantity,	
To make	120 mils

(Michael Reese Hospital.)

No. 153.

ANTIPRURITIC LOTION.

Menthol	0.6	Gm.
Liq. Phenol	2	mils
Bismuth Subnitrate,		
Zinc Oxide, of each	15	Gm.
Cherry Laurel Water	30	mils
Formalin Antiseptic (No. 154)	60	mils
Rose Water, a sufficient quantity,		
To make	180	mils

(Michael Reese Hospital.)

No. 154.

FORMALIN ANTISEPTIC.

(Borolyptus.)

Cinnamic Acid	3	Gm.
Benzoic Acid	10	Gm.
Boric Acid	55	Gm.
Thymol	10	Gm.
Menthol	10	Gm.
Oil of Pinus Pumilio	4	mils
Oil of Eucalyptus	8	mils
Tincture of Myrrh	8	mils
Solut. of Formaldehyde	38	mils
Acetic Ether	4	mils
Glycerin	240	mils
Alcohol	625	mils
Water, a sufficient quantity,		
To make	20,000	mils

(Michael Reese Hospital.)

No. 155.

PULVIS INSPERSORIUS, ANDERSONII.

Anderson's Dusting Powder.

Camphor	6	Gm.
Starch	30	Gm.
Zinc Oxide	15	Gm.

(Michael Reese Hospital.)

No. 156.

INHALATION FLUID.

Oil of Eucalyptus,		
Oil of Pine Needles,		
Oil of Gaultheria, of each	2	mils
Comp. Tincture of Benzoin, a sufficient quantity,		
To make	30	mils

Contributed by the Chairman:

No. 157.

FULLER'S INHALANT.

Menthol	2.5	Gm.
Guaiacol	4.0	mils
Camphorated Tinct. Opium	125.0	mils
Comp. Tinct. Benzoin, a sufficient quantity,		
To make	250	mils

No. 158.

FULLER'S INHALANT.

(Modified.)

Terebene	4	mils
Fuller's Inhalant (No. 157), a sufficient quantity,		
To make	250	mils

No. 159.

BAUNSCHEID OEL.

Euphorbium	5	Gm.
Cantharides	3	Gm.
Olive Oil	100	mils

Digest on a water-bath and then filter. This oil is used as a counter-irritant after the skin has been punctured by a special instrument.

No. 160.

LEBENSWECKER OEL.

Croton Oil	1	mil
Olive Oil	100	mils

This oil is used as a rubefacient and counter-irritant, especially by foreigners.

No. 161.

WILLIAM'S EYE LOTION.

Sodium Borate	2	Gm.
Camphor Water	100	mils

CORRECTION.

Contributed by John K. Thum:

No. 127 A.

SOLUBLE CRUDE CARBOLIC ACID.

Liquid Soda Soap, No. 128	1000	mils
Crude Carbolic Acid	1000	mils

(German Hospital, Philadelphia.)

This is the corrected formula to replace No. 127 on page 310, in which the quantity of Crude Carbolic Acid was given as 100 mils, instead of 1000 mils. This preparation should have a strength of 50 percent.

PROCEEDINGS OF THE LOCAL BRANCHES

"All papers presented to the Association and its branches shall become the property of the Association, with the understanding that they are not to be published in any other publication than those of the Association, except by consent of the Committee on Publication."—By-Laws, Chapter X, Art. III.

Reports of the meetings of the Local Branches should be mailed to the Editor on the day following the meeting, if possible. Minutes should be *plainly* written, or typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly, and manuscript should be signed by the reporter.

CHICAGO.

The Chicago Branch of the American Pharmaceutical Association met Friday evening, March 24, for a discussion of photographic supplies as a sideline for druggists. There was a fine exhibition of cameras in connection with the meeting. Chicago druggists and students at the schools of pharmacy were invited and a large audience was present.

Messrs. R. I. Raymoth and J. W. Hammer, of the Burke and James Company, demonstrated the whys and wherefores of good and poor results on printing and developing and also discussed many interesting points regarding the installation and advertising of this side line and the profitable handling of it. The personal experiences of a number of those present indicated that in some localities at least, photographic supplies had almost ceased being a side line and had become a main line. One outlying Chicago drug store reported sales of photographic supplies amounting to $1200.00 per month during the summer.

Messrs. Hugh Craig and E. N. Gathercoal presented a number of lantern slides of prints furnished by the Hess-Ives Corporation of Philadelphia, illustrating the Ives process of photography in natural colors. The slides consisted of the actual prints mounted between plates of glass, and the pictures were very beautiful. The camera for this work is so constructed that three plates, each with a different composition, are placed into it at one time and all receive the same exposure. The plates are then removed and developed at the same time and under the same conditions. They are printed one on blue print paper, one on a reddish colored celluloid film and one on a yellowish colored film. The red colored film is placed on top of the blue print and the yellowish film on top of the red one, care being taken to have them properly superimposed. They are then mounted in a card holder or between plates of glass and constitute the finished picture. The naturalness of the coloring is really marvellous.

A resolution of sympathy for Professor W. B. Day in the loss of his wife was adopted by a silent rising vote.

E. N. GATHERCOAL, Secretary.

DENVER.

The March meeting of the Denver Branch of the American Pharmaceutical Association was held on March 21, at the Adams Hotel. As usual the members assembled for dinner at 7.00 o'clock, after which the meeting was called to order by President Hover.

The minutes of the previous meeting were read and approved; whereupon the Committee on Bathing Alcohol reported that they had met and after careful consideration had decided on the following formula:

Tartar emetic	1 Gm.
Formaldehyde	4 mils
Water	125 mils
Alcohol, a sufficient quantity,	
To make	1000 mils

This represents Formula No. 3 (alcohol, containing one part formaldehyde and 250 parts of alcohol), with the addition of tartar emetic in a quantity sufficient so that one ounce or more of the mixture when taken internally will cause emesis.

The label framed by the Committee read as follows:

BATHING ALCOHOL FOR EXTERNAL USE ONLY

POISONOUS IF TAKEN INTERNALLY

Pure grain Alcohol modified to comply with the Federal Revenue Regulations.

The label to be printed in red ink.

The Committee reported that it had attended the last County Medical Society Meeting and presented to that body the above mentioned formula and the reasons for its adoption. They requested the Medical Society to consider this formula and approve same if they could do so consistently. The Medical Association decided to take the matter under advisement and also confer with the Pharmaceutical Association of the City at a joint luncheon to be held at the Metropole Hotel, Thursday noon, March 23.

Some discussion of the Committee's formula ensued. Mr. Jeancon mentioned that he had used this formula and found two people who complained that the mixture was irritating. Mr. Clayton reported that he had a similar report on the formaldehyde formula, most of the complaints coming from nurses in the hospital. He also stated that when they requested a change in the composition of the Bathing Alcohol he usually added carbolic acid or oil of cajuput, according to the desires of the customer. The addition was made to the Bathing Alcohol of the formaldehyde formula he had on hand, and invariably was told that they liked it very much better and that it was satisfactory in every way, showing that the irritating qualities of the Bathing Alcohol lay more in the imagination of the individual than in the mixture.

It was reported that tartar emetic is occasionally prescribed externally in 25 percent ointment and for that reason it would be doubtful if a 1 to 1000 solution could prove objectionable.

President Hover then spoke in regard to the Legislative Committee, stating that its duties should not only be confined to local legislative matters, but suggested that the Committee might take action on the Stevens Bill now before Congress, if the Branch so desired. On putting the question, it was found the members were in favor of such action and the Legislative Committee was instructed accordingly.

Mr. Clayton was called upon to report on the proposed change in the By-laws, making provision for Associated Membership. Mr. Clayton reported that he had not found time to frame the necessary changes and asked to have the matter postponed until the next meeting.

President Hover then introduced Mr. Schilling of the German-American Trust Company, who was on the program for an address entitled "Easy Money." President Hover stated that Mr. Schilling had asked for the permission to change the title of his address to "Dreamers." Mr. Hover thought that the change of title would not necessarily indicate any change in what Mr. Schilling was going to say.

Mr. Schilling's address on "Dreamers" was well presented and highly appreciated by his audience. He spoke of the "dreamer" as a creative genius of everything worth while in this world.

President Hover then called on Mr. E. L. Scholtz for response. Mr. Scholtz also spoke of the "Dreamer" and his influence on the progress of civilization.

Further expressions came from Mr. Hensel and Mr. Hover on the subject of "Dreamers."

President Hover then introduced Mr. Trimble of the Denver Dry Goods Company, who was on the program for an address entitled "Character." After telling a few greatly appreciated stories, he proceeded with his address, which proved to be a masterful presentation of the meaning and importance of "Character" in business life and institutions.

The next speaker on the program was Mr. Jeancon, who was then called upon to present a practical system of accounting for retail druggists, as carried on by him in his store for the past nine years, which Mr. Jeancon did in a terse and clear manner. Mr. Jeancon used a chart illustrating his system and explained the advantages of a system of accounting that would show the proprietor every day the amount of goods sold in the various departments of his store, as well as the gross profits made. The day's record in Mr. Jeancon's system was transferred to a monthly sheet, giving monthly totals, which could be further transferred to a yearly sheet, giving yearly totals, and prove valuable for comparison. Mr. Jeancon stated that he had calculated a monthly inventory from the basis of this record and on three actual inventories in the past nine years had found that the actual inventory at no time varied

more than $100.00 from the theoretical inventories arrived at by his system.

Some discussion followed in which various questions were asked. It was generally agreed that Mr. Jeancon's system was excellent, especially for a small store with a limited number of clerks.

Quite a general and informal discussion started at this point, involving average gross profits, cost of doing business, increasing cost of doing business, proportions of the total volume of sales, represented by the various lines of drug store merchandising, as well as prescription work.

The Secretary reported that a suggestion had been made to him during the day in regard to the State Board of Pharmacy examinations, referring especially to that portion in the examination commonly known as "identification." The suggestion, as conveyed by Mr. Nitardy, centred on placing on the containers of drugs, chemicals, etc., used by the Board for "identification," certain technical information, as, for example, therapeutic action, dosage, solubility, physical or chemical characteristics, tests, etc. Such information would be of little value to a candidate not thoroughly familiar with the material in question but would be a guide of considerable value to the well-informed candidate and eliminate the guess work necessary when he must rely entirely on the appearance and his sense of taste and smell; the latter easily becoming confused when, as is the case in some boards, about 100 samples must be identified.

President Hover called on Mr. Clayton to state his view of this matter. Mr. Clayton said that he thought the "identification" part of the examination of the Colorado Board was too easy, as out of 37 candidates at the last examination, there was but one who was not able to qualify in this test and many who passed in this work showed a very poor standing in the other subjects of the examination. He spoke of the examination in general, and suggested that pharmacists make it a practice to visit the State Board, whenever possible, during examination time. The State Board would like to have the pharmacists present so they might witness their work and how the examinations were conducted. It would acquaint the druggists with the duties and work of the Board and give the latter the advantage of the former's criticisms or suggestions.

A vote of thanks was then extended to Messrs. Schilling and Trimble for their presence and addresses.

F. W. NITARDY, Secretary.

DETROIT.

The March meeting of the Detroit Branch of the American Pharmaceutical Association was held Friday evening the 17th, at the Wayne County Medical Society Building.

After a very enjoyable dinner, the meeting was called to order by President Scoville. The minutes of the last meeting were read and approved.

On motion of Mr. Hall, appropriate recognition of the birthday of one of the most distinguished Branch members, Dr. A. B. Lyons, was made.

The regular program was then taken up. The first speaker was Mr. F. F. Ingram, Junior, on "The Manufacture of Perfumes." Mr. Ingram, having spent several years in Europe in connection with the perfume industry, gave a very interesting and instructive talk.

Mr. E. R. Jones read a paper on "The Manufacture of Toilet Articles," covering many points of interest to the pharmacist.

The last speaker was Mr. George M. Schettler. Mr. Schettler has had an exceptional experience in the handling of toilet articles of the better class and his talk on "The History of the Perfume Trade in This Country," together with a description of the same as it exists, was both illuminating and exceedingly profitable.

The many questions asked each speaker showed that their subjects were of unusual interest.

The meeting then adjourned.

A. A. WHEELER, Secretary.

NASHVILLE.

The regular monthly meeting of the Nashville Branch, American Pharmaceutical Association, was held in the Music Room of the Nashville Y. M. C. A., Thursday, March 16, in joint session with the Nashville Drug Club.

Owing to the absence of Dr. J. O. Burge, president of the Branch, and D. J. Kuhn, president of the Club, both of whom were prevented by sickness from attending, D. S. Sanders was selected to preside.

After the minutes had been read and ap-

proved, William R. White made a report of the work recently accomplished by the Publicity Committee, which showed that the cooperation of all of the Nashville dailies had been secured in an effort to inform the public of the causes of the exceedingly high prices of drugs. One lengthy article has already appeared in the Tennesseean and American and three shorter ones in the Nashville Banner. Others will follow from time to time. Improvement is also promised in the accuracy of the daily market quotations of drugs.

The great importance of informing the public about the conditions prevailing in the drug market was freely discussed by the members and clippings from the daily papers of several other cities were read.

A list of the day's quotations on the most commonly used drugs was read by the secretary and proved to be of deep interest to the members. A number of instances were cited where druggists had been selling at prices far below the present quotations and were compelled to replace their stock at advanced prices.

Mr. D. S. Sanders spoke on "How to Collect Debts." He favored short credits and close collections, and said he would allow no man to owe him an account six months without an attempt to enforce collection. He required his bookkeeper to furnish him with what he termed "a picture of his ledger" each month. This consisted of an alphabetical list of accounts due, with a column adjacent for credits. He claimed this saved much time, besides being an easy means of ascertaining the amount due at any time.

WILLIAM R. WHITE, Secretary.

NEW YORK.

The March meeting of the New York Branch of the American Pharmaceutical Association was called to order by President Lascoff, at 9.00 P.M., on the evening of the 13th.

Upon motion the reading of the minutes of the February meeting was dispensed with and they were ordered adopted as printed.

The Treasurer's report was read and accepted with thanks.

Mr. McElhenie, Member of the Council, was not present and no report was received.

Chairman McCartney of the Membership Committee presented the names of Messrs. R. C. Stofer, of Norwich, N. Y., and C. Dill, of Brooklyn, N. Y., for election to membership in the Branch.

The following applications for membership in the parent association were presented and the Secretary was ordered to forward them to the General Secretary:

H. Rolff Planten, 93 Henry St., Brooklyn.

Burton T. Bush, 18 Platt St., N. Y.

George R. Tompkins, Hudson and Vestry Sts., N. Y.

F. F. Garcia, 100 William St., N. Y.

Wm. P. McNulty, 21 Gold St., Norwich, N. Y.

J. E. Mace, 168 Duane St., N. Y.

Dr. Anderson followed with a lengthy and interesting report concerning many different kinds of proposed legislative measures, national, state, and local.

Dr. Diner announced that he had appointed the following to serve with him upon the Committee on Fraternal Relations: Messrs. Lehman, Mansfield, Mayer and Walter. He furthermore reported that he wished to have the opinion of the members as to the advisability of holding a joint meeting with the County Medical Society early in the fall. Upon motion it was unanimously decided to ask the committee to arrange for such a meeting.

No report on Progress of Pharmacy was received as the Chairman was absent.

Letters of resignation were read from Messrs. R. C. Holmes and F. A. Hereth and were accepted with regret.

A communication from H. J. Schnell was received and action thereon deferred.

The following resolution was presented by Dr. H. V. Arny and unanimously adopted.

Resolved, That the New York Branch of the American Pharmaceutical Association favors the general adoption of the centigrade system of thermometric units and urges the passage of the Johnson Bill (H. R. No. 528), and be it furthermore

Resolved, That the Secretary of the New York Branch be and is hereby directed to send copies of this resolution to Congressman Johnson and to the Thermometer Committee of the American Association for the Advancement of Science.

The speaker of the evening, Editor Eberle of the JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, then entertained the members with a very interesting paper on the work of the Association and its JOURNAL.

The paper was discussed by several mem-

bers and it was then moved that the Editor be requested to print the speaker's paper. The motion was carried unanimously, and after extending a rising vote of thanks to Mr. Eberle the meeting adjourned.

Former President Mayo appointed himself a committee of one to greet our guest upon his arrival from Philadelphia and escorted him to the "Alps," where about twenty members were awaiting them and a very pleasant hour was spent before the meeting came to order.

The members were very much surprised at the sudden disappearance of our guest immediately after adjournment and it was not until the next day that some one discovered that our good friend Kantrovitz had kidnapped him in order to show him Madison Square Garden where the German Bazaar for the War Sufferers was being held.

JEANNOT HOSTMANN, Secretary.

PHILADELPHIA.

The regular monthly meeting of the Philadelphia Branch of the American Pharmaceutical Association was held March 14, at the Temple College of Pharmacy.

President Henry called the meeting to order at 8.45 P.M. The minutes of the last meeting were read and approved.

Mr. W. L. Cliffe, of the local Branch and chairman of the Committee on the Entertainment of A. Ph. A. Members, reported that a joint meeting was held at Atlantic City with committees from the New York and Philadelphia Branches and that they had recommended to the council a date soon after Labor Day as suitable for the National Meeting.

Mr. Cliffe also read a report from Prof. Kraemer, chairman of the Committee on the William Proctor Memorial, which included a short history of the bill now before Congress for the appropriation of $2000.00 and a site in the Smithsonian Grounds for a base and pedestal for the monument in memory of William Proctor, Jr. At the close of his report Mr. Cliffe moved that the secretary be instructed to request each member of the Philadelphia Branch to write to the Pennsylvania congressmen and senators asking their support for this bill (H. R. No. 11076). The motion was seconded and passed.

The treasurer submitted the following report:

Balance March 4, 1915	$ 58.75
Receipts from Dues	90.00
Total	$148.75
Expenditures	97.80
Balance	50.95
Funds on Deposit	$ 38.95
Received too late for deposit:	
Cash	6.00
Checks	6.00
	$ 50.95

(Signed) J. ED. BREWER, Treasurer.

Dr. Fischelis moved that the Treasurer's report be accepted and an auditing committee be appointed to audit his books. Carried.

President Henry appointed John G. Roberts and J. W. England to act on this committee.

The program of the evening was then taken up and Dr. R. P. Fischelis presented "Combating War Prices by the Use of Galenicals." This paper was interestingly discussed by Messrs. Apple, Morse, McNeary, Cliffe and Gershenfeldt. Mr. Gershenfeldt moved that the subject of Dr. Fischelis's paper be brought to the attention of the Committee on Fraternal Relations. Dr. Apple seconded the motion and, when put to vote, it carried.

The nominating committee submitted the following report: For President, J. W. Sturmer; for first Vice-President, W. G. Toplis; for second Vice-President, Ambrose Hunsberger; for Secretary-Treasurer, J. Ed. Brewer. Committee on Practical Pharmacy, J. C. Peacock, Chairman, Quintus Hoch and W. W. McNeary. Committee on Fraternal Relations, R. P. Fischelis, Chairman, F. E. Stewart and J. Atlee Dean. Committee on Membership, C. H. LaWall, Chairman, F. M. Apple and J. W. England.

Because of the intimate relation existing between Pharmacy and Chemistry, and because of the abolition of the Scientific Section of the Branch, which formerly devoted its sessions to the consideration of chemical as well as other pharmaceutical problems, your committee desires to recommend that the By-laws of the Branch be amended to include, under the heading of "Standing Committees," a committee on chemistry.

(Signed) E. FULLERTON COOK, Chairman.
JOHN R. MINEHART,
ROBERT P. FISCHELIS.

Mr. Cliffe moved that the report of the nominating committee be accepted and that

the Secretary be instructed to cast the ballot. This motion was seconded and carried, the secretary casting the ballot electing the officers as called for in the report of the nominating committee.

Dr. Fischelis moved that the motion to amend the By-laws as suggested in the report of the nominating committee be laid on the table till April meeting. This motion was seconded and passed when voted upon.

President Henry then introduced the new officers, after which the meeting adjourned.

J. Ed. Brewer, Secretary.

PITTSBURGH.

At the meeting of the Pittsburgh Branch of the American Pharmaceutical Association, March 3, Dr. F. J. Blumenschein, Associate Professor of Pharmacy, Pittsburgh College of Pharmacy, presented a valuable paper on the topic, "Profits in Manufacturing Pharmaceuticals," in answer to the query "Is the greater profit obtained in selling or manufacturing?" Doctor Blumenschein maintained that just as much credit belongs to the manufacturing department as to the sales department; one is dependent on the other. That goods may be sold without the seller having anything to do with the manufacturing of them may be true, in a sense, but the seller pays for having them manufactured—he hires someone to do it.

It is well established that the more you know of your wares the better you can dwell upon their merits, and, naturally, if you make them yourself the certainty of their composition is assured. This is not true when you buy them in the open market, no matter how hard the manufacturer may attempt to make you believe in his integrity. The best way to obtain this knowledge is by doing your own manufacturing, not by reading the other fellow's label. You are all in business to make a profit, and when you buy your preparations from a manufacturer you may rest assured that his profit has been taken, and just to that amount your profit has been shortened. It is not reasonable to suppose that the product of a manufacturing pharmaceutical house is made by anyone possessing any better knowledge of pharmacy than you do, if you are a graduate of a reputable school of pharmacy. The chances are ten to one that the actual work has been done by cheap help, and you have no certain knowledge, at first hand, that the materials employed are not as cheap as the help.

Doctor Blumenschein presented a table covering in detail thirty-one galenicals that were produced in a prescription room with floor space of three feet by sixteen feet. Every item of labor, overhead, investment, etc., was computed and compared with the cost when bought from a manufacturing pharmaceutical house. The net saving effected was $81.05, a gross saving of 54 percent.

A report issued from the office of information of the U. S. Department of Agriculture, Bureau of Chemistry, covering the sanitary condition of bottled mineral and table waters, the sale of which is largely dependent upon the belief of the public in the purity of the product, shows that the tolerance established by the Public Health Service of the Treasury Department for such waters is none too rigid, and gives the Treasury Department standards for determining their character. This brought out quite an interesting discussion, in which it was shown that in the matter of purity the majority of the most highly lauded waters on the market are more or less of a delusion and a snare.

B. E. Pritchard, Secretary.

SAN FRANCISCO.

The San Francisco Branch of the American Pharmaceutical Association met on the evening of March 9, 1916, at 723 Pacific Building. President Lengfeld presided. The minutes of the February meeting were read and approved. During the report of pharmaceutical literature mention was made of the formula for Mandell's solution. There seem to be two preparations, the one containing menthol, iodine, potassium iodide in glycerin, the other has oil of peppermint in place of the menthol.

An abstract on drug fluctuations brought out the necessity of pharmacists testing their contemplated purchases. The case of aspirin was cited, and it was said that the average pharmacy with a moderate amount of apparatus could successfully carry out the required tests for purity. When this habit of testing drugs and chemicals has been acquired the work is more or less of a routine nature, and the pharmacist will feel amply repaid for his laboratory venture.

The demonstration of the filling of soft gelatine capsules was interesting. These capsules are suitable for most oils and strong alcoholic liquids, but unsuited for aqueous solutions. At the present time benzol and olive oil, creosote carbonate and olive oil and

creosote and oil are so often prescribed. Mixture with oil is necessary to prevent perforation of the capsules, due to the solubility of benzol and creosote in glycerin. Even mercurial ointment is now ordered in soft capsules, so soft capsules are used for external mixtures, as well as internal. In filling, a small air space should be left to preserve elasticity. President Lengfeld recommended to wipe off the necks with a cotton applicator dipped in hot water and, after sealing the filled capsules with the gelatine solution by means of a glass rod, to clean them off with a little chloroform, which he preferred to alcohol.

Further discussion centred on the growing tendency of physicians to specify Blaud's mass in powder form and to give from 1 to 8 grammes per day. Beringer's formula and one by Mr. H. A. B. Dunning given in the Dispensatory were mentioned. One of the members spoke of the French preparation of iron which corresponds to our tincture. It is prepared from the protochloride of iron and ammonium chloride, the resulting combination being dissolved in alcohol.

During the evening many queries were answered and it was suggested that a "Question Box" might prove instructive and at the same time add interest to the meetings.

The subject of Pharmacy and National Preparedness suggested by an editorial in the *Pharmaceutical Era* was thought to be an opportune topic for an evening's program. A committee was appointed to look into this matter and it is hoped that the Branch and its friends may anticipate a pleasant evening in the near future.

The Branch will meet again on Thursday evening, April 13, 1916, 723 Pacific Building.

CLARISSA M. ROEHR, Secretary.

CITY OF WASHINGTON.

The regular monthly meeting of the City of Washington Branch of the American Pharmaceutical Association was held March 29, at the National College of Pharmacy. The subject for consideration was a paper by Dr. W. W. Stockberger of the Bureau of Plant Industry, on "Some Practical Aspects of Drug Plant Growing."

Doctor Stockberger pointed out many features in connection with the growing of drug plants, not only from an experimental point of view, but from the practical aspects of the question. He discussed and presented statistics showing the amount of various drugs imported and compared same with crops grown in this country and the amount of acreage that would be required. He further pointed out that from the farmer's standpoint, the growing of drug plants would be a losing proposition, as the total amount required would be so small in comparison with other crops, like wheat and corn, that it would be a matter of impossibility to secure sufficient remuneration to justify the growing of same.

The proposition is one that is entirely up to the manufacturers, and therefore becomes what might be said to be a specialized branch of their particular business. The only other way that drug plant growing could be developed in this country at the present time would be along the basis that is at present followed by many farmers' wives in handling chickens and finding a market for poultry and eggs.

He further showed that an enormous amount of work had been done very successfully by Professor Kraemer and Professor Kremers, and that due credit should be given each of them.

Mr. Fuller, of the Bureau of Industrial Research, opened the discussion, and as he has had much practical experience, the Bureau having for some time conducted a drug farm, brought out many points in connection with the growing of plants for practical and profitable results. Mr. Fuller agreed with Doctor Stockberger fully and showed that the development on any very large scale generally would result in financial ruin, consequently he could not do otherwise than say that this subject was one that could only be conducted along the lines of a specialty by a few, and that he believed the manufacturers requiring these drugs were the proper ones to develop their culture.

The paper brought out considerable discussion, which was participated in by all present.

The committee on the bill pending before Congress, providing for prohibition in the District of Columbia and containing provisions whereby the obtaining of ethyl alcohol for any purpose was so hampered that pharmacists would have serious difficulty in obtaining their legitimate supplies, reported that the same had been satisfactorily amended along the lines suggested. As the committee had completed their work, they asked to be discharged, which on motion was agreed to.

S. L. HILTON, Secretary.

COUNCIL BUSINESS

A. PH. A. COUNCIL LETTER NO. 17.

PHILADELPHIA, PA., January 29, 1916.

To the Members of the Council:

GENTLEMEN:

Motion No. 31. (*Election of Members; Applications Nos.* 33 *to* 55, *inclusive*) has received a majority of affirmative votes.

Motion No. 32, *by Wilbur L. Scoville and seconded by Charles H. La Wall, relates to* (*Non-Publication of "Memoranda" on National Formulary in Council Letter No.* 13).

The following has been received:

PHILADELPHIA, PA., January 28, 1916.

Council of the American Pharmaceutical Association:

GENTLEMEN:

The fourth edition of the National Formulary will be issued shortly and the Committee on Publication asks your attention to the subject of the use of the text of the National Formulary by periodicals, textbooks and works of reference, and the conditions under which such use shall be permitted.

The subject is a very important one. At present the following resolution, passed by the Council on August 20, 1912, is in full force and effect:

"The publication of the *entire* book of the National Formulary with or without comments shall be prohibited, and the Council shall permit the *partial* reproduction of the text of the National Formulary by periodicals and text-books, such as cannot be used as a substitute for the National Formulary, under a compensation to the Association proportioned to the amount of text to be used, the amount to be determined in each case by the Council."

The Committee on Publication believes that this ruling is defective. It is a serious question whether the American Pharmaceutical Association can legally exact compensation for the *partial* reproduction of the text such as cannot be used as a substitute for the National Formulary (as the resolution specifies). The literature of pharmacy is replete with "partial reproductions" of the text for which no compensation has been given.

But while liberty should be given to *partially* use the text—in fact such use advertises the book—exceeding care should be exercised that this privilege is not abused and the property-rights of the American Pharmaceutical Association in the National Formulary are not injured.

The conditions of use of the text should be so stated that there can be no possibility of doubt or misunderstanding; furthermore, the rule adopted should be printed in bold type in some conspicuous portion of each edition of the book, preferably on the back of the title-page.

The Committee on Publication therefore asks the Council to reconsider its resolution of August 20, 1912, and submits the following resolution for consideration:

"The *partial reproduction* of the text of the National Formulary by periodicals, textbooks and works of reference for the purpose of comment, *such as cannot be used as a substitute for the National Formulary*, will be permitted, provided the form of reproduction is first approved by the Committee on Publication of the American Pharmaceutical Association. The *substantial reproduction* of the text of the National Formulary in such a way as to permit of such reproduction being used in lieu of the National Formulary is prohibited, except after approval of the form and under an agreement for compensation to be determined in each particular case by the Committee on Publication and approved by the Council of the American Pharmaceutical Association."

Very truly yours,

J. W. ENGLAND,

Chairman of Committee on Publication.

Motion No. 33. (*Election of Members.*) You are requested to vote on the following applications for membership:

No. 56. William Heim, 1001 Janes Ave., Saginaw, Mich., rec. by H. M. Whelpley and J. W. Mackelden.

No. 57. Elmer S. Loyd, 1600 West End St., Nashville, Tenn., rec. by E. A. Ruddiman and J. T. McGill.

No. 58. Dean Burton Crawford, Pacific Ave. cor. Florida St., Atlantic City, N. J., rec. by Charles H. La Wall and M. R. La Wall.

No. 59. M. H. Breininger, care of Brooks Drug & Chemical Co., Waelder, Texas, rec. by G. D. Timmons and E. H. Wisner.

No. 60. Preston Dunn, Eskridge, Kansas, rec. by E. H. Wisner and G. D. Timmons.

No. 61. Herman Walter, 213 Second Ave., New York, N. Y., rec. by J. Leon Lascoff and Wm. B. Day.

No. 62. F. S. Frankfurter, 807 Courtlandt Ave., New York, N. Y., rec. by J. Leon Lascoff and Jacob Diner.

No. 63. Frederick Arthur Leslie, 115 West 68th St., New York, N. Y., rec. by H. V. Arny and Jeannot Hostmann.

No. 64. Joseph Goodman, Broadway and Baxter Ave., Elmhurst, L. I., N. Y., rec. by Leo Roon and Jeannot Hostmann.

No. 65. Edward Plaut, 120 William St., New York, N. Y., rec. by J. Leon Lascoff and Jeannot Hostmann.

No. 66. William Samuel Eichenberger, 1016 North Adams St., Peoria, Ill., rec. by W. B. Day and E. N. Gathercoal.

No. 67. Anthony Di Bella, 1431 Boscobel St., New York, N. Y., rec. by William H. Smith and L. J. Schlemiger.

No. 68. Walter Brooks, 2033 Atlantic Ave., Atlantic City, N. J., rec. by Charles H. La Wall and M. R. La Wall.

No. 69. Millard Erwin Cuskaden, Atlantic & Michigan Aves., Atlantic City, N. J., rec. by Charles H. La Wall and M. R. La Wall.

No. 70. Alfred Melchoir Letzerich, Harlingen, Texas, rec. by H. M. Whelpley and J. W. Mackelden.

No. 71. Clarence Herman Adams, 402 Upper Main St., Henderson, Kentucky, rec. by John T. Elam and Dr. H. M. Whelpley.

No. 72. Eugene A. Dunbar, U. S. Naval Station, Guantanamo Bay, Cuba, rec. by Wm. B. Day and J. F. Rupert.

J. W. ENGLAND,
Secretary of the Council.

415 N. 33rd St., Philadelphia, Pa.

A. PH. A. COUNCIL LETTER NO. 18.

PHILADELPHIA, PA., February 25, 1916.

To the Members of the Council:

GENTLEMEN:

Motions No. 32 (Non-Publication of Memoranda on National Formulary in Council Letter No. 13) and *No. 33 (Election of Members; Applications Nos. 56 to 72 inclusive)* have each received a majority of affirmative votes.

Albert Schneider has resigned as Council Representative from the San Francisco Branch and, at the meeting of the Branch held February 10, 1916, Miss Clarissa M. Roehr was elected to succeed him.

Motion No. 34 (Adoption of Proposed Resolution on Use of Text of National Formulary). Moved by S. L. Hilton, seconded by C. A. Mayo, that the report of the Committee on Publication in Council Letter No. 17 be received, the resolution referred to reconsidered, and the proposed resolution adopted.

Otto Raubenheimer, Chairman of the Committee on Recipe Book, states that no appropriation was made for the Committee on Recipe Book in the Budget of Appropriations for 1916 and asks for an appropriation of fifty dollars for binders, perforated paper, etc., for the Committee.

Motion No. 35 (Appropriation to Committee on Recipe Book). Moved by Dr. F. E. Stewart, seconded by C. H. La Wall, that an appropriation of fifty dollars be made to the Committee on Recipe Book for the purchase of binders, perforated paper, etc.

The above appropriation is approved by the Committee on Finance.

Motion No. 36 (Time of Sixty-fourth Annual Meeting). Moved by Local Secretary Charles Holzhauer, seconded by J. W. England, that the Sixty-fourth Annual Meeting of the American Pharmaceutical Association be held during the week beginning Monday, September 4, 1916.

Monday, September 4, will be Labor Day, and the thought is to have the first Council meeting on Monday evening, the first general session on Tuesday at 11 A.M., and the final general session on Friday afternoon.

Headquarters will be the Hotel Chalfonte.

The Committee on Program submits the following tentative program for the Sixty-fourth Annual Meeting of the American Pharmaceutical Association, to be held at Atlantic City, N. J., Sept. 4–8 inclusive, 1916.

TENTATIVE PROGRAM.

Monday, September 4 (Labor Day):

7.30 P.M. Meeting of the Council.

Tuesday, September 5:

11.00 A.M. First General Session.
Meeting of Committee on Nominations.
Meeting of Committee on Resolutions.

2.00 P.M. Section on Education and Legislation.
Commercial Section.
Women's Section.

7.30 P.M. Meeting of the Council.
House of Delegates.

9.30 P.M. President's Reception.

Wednesday, September 6:

9.30 A.M. Second General Session.

12.30 P.M. Luncheon of College Alumni.

2.00 P.M. Section on Education and Legislation.
Section on Practical Pharmacy and Dispensing (Pharmacopœias, Formularies and Standards).
Commercial Section.

7.30 P.M. Meeting of the Council.
Joint Session of Section on Education and Legislation, the A. C. P. F. and the N. A. B. P.
House of Delegates.

Thursday, September 7:

9.30 A.M. Scientific Section.
Section on Practical Pharmacy and Dispensing (Pharmacopœias, Formularies and Standards).

2.00 P.M. Scientific Section.
Section on Practical Pharmacy and Dispensing (Pharmacopœias, Formularies and Standards).
Women's Section.

7.30 P.M. Meeting of the Council (Reorganization).
House of Delegates.

Friday, September 8:

9.30 A.M. Meeting of the Council.
Historical Section.
Scientific Section.

2.00 P.M. Final General Session.

Saturday, September 9:

Sightseeing.

Do you approve the tentative program as above submitted? This will be regarded as *Motion No. 37* (*Approval of Tentative Program for Sixty-fourth Annual Meeting*).

Motion No. 38 (*Election of Members*).

You are requested to vote on the following applications for membership:

No. 73. Moses Mordechai Albert, B.A., B.C., M.Phm., Buab-Ed-Driss (Albert's Pharmacy), Beirut, Syria, Turkey, rec. by James A. Patch and T. Ladakis.

No. 74. Miss Rosa T. Lagomasino, 237 Twenty-third St., Habana, Vedado, Cuba, rec. by Jose Guillermo Diaz and Jose P. Alacan.

No. 75. Chester Orvis Kimball, U. S. Navy, U. S. S. Cummings, New York, N. Y., rec. by Wm. B. Day and J. F. Rupert.

No. 76. Fred C. Jones, 415-16 Temple Court Bldg., Denver, Col., rec. by W. T. Hover and Milton P. Givens, Jr.

No. 77. Henry Topp, 1313 Washington St., Portsmouth, Va., rec. by Wm. B. Day and J. F. Rupert.

No. 78. Frank G. Serodino, 1511 Fern St., San Diego, Cal., rec. by Edward Strahlman and H. M. Whelpley.

No. 79. J. N. Judy, M.D., Petersburg, West Virginia, rec. by Chas. H. Rogers and Wm. B. Day.

No. 80. Felipe Pazos Boada, Campanario No. 70 (bajos), Habana, Cuba, rec. by Jose P. Alacan and Jose Guillermo Diaz.

No. 81. Clarence Frederick Booth, 52 Woodward Avenue, Buffalo, N. Y., rec. by A. M. Roehrig and Geo. Reimann.

No. 82. Francis Warner Ekstrand, Salina, Kansas, rec. by Wm. B. Day and L. D. Havenhill.

No. 83. Wilmer H. Schulze, Phar.D., 2245 Eastern Ave., Baltimore, Md., rec. by Louis Schulze and Daniel Base.

No. 84. Ivor Griffith, 4615 A Street, Wyoming, Phila., Pa., rec. by R. H. Lackey and Charles H. La Wall.

No. 85. William Fletcher Murdy, D.D.S., Hospital Steward, U. S. N., Dispensary, Navy Yard, Norfolk, Va., rec. by W. B. Day and J. F. Rupert.

No. 86. Rudolph Charles Payler, U. S. S. "*Hartford*," Navy Yard, Charleston, South Carolina, rec. by Wm. B. Day and J. F. Rupert.

No. 87. William E. Britt, Juneau, Alaska, rec. by C. Osseward and F. E. Ryus.

No. 88. Frederick Ludwig, M.D., Hospital Steward, U. S. N., U. S. N. Training Station, Great Lakes, Ill., rec. by W. B. Day and J. W. England.

No. 89. Lloyd Bruce Finley, care of Bureau Medicine and Surgery, Navy Department, Washington, D. C., rec. by Wm. B. Day and J. F. Rupert.

No. 90. Gustave F. Peterson, 216 Higgins Ave., Missoula, Montana, rec. by Charles E. Mollet and Alexander F. Peterson.

No. 91. Albert Raymond Collins, 333 University Ave., Missoula, Montana, rec. by Charles E. Mollet and Alexander F. Peterson.

No. 92. Wm. G. Peckham, 110 W. 37th St., Chicago, Ill., rec. by Wm. B. Day and E. N. Gathercoal.

No. 93. Dr. Agustin Ortiz, Havana, Cuba, rec. by Jose P. Alacan and Jose Guillermo Diaz.

No. 94. Charles Joseph Hoehn, 271 Norfolk St., Newark, N. J., rec. by Frank C. Stutzlen and Charles Holzhauer.

No. 95. John J. Chwatal, 2756 N. 22d St., Chicago, Ill., rec. by Chas. C. Orr and Hugh Craig.

No. 96. Charles Howard Bowersox, 426 The Rose Building, Cleveland, Ohio, rec. by Eugene R. Selzer and Wm. B. Day.

No. 97. Frederick Jefferson Cermak, 18501 Detroit Ave., Cleveland (Lakewood), Ohio, rec. by Eugene R. Selzer and Wm. B. Day.

No. 98. Percy A. Chedister, 1275 Curtis St., Denver, Col., rec. by F. W. Nitardy and W. A. Hover.

No. 99. George W. Graves, Mansfield, Arkansas, rec. by Wm. B. Day and J. W. England.

No. 100. Lester Elmer Bote, United States Ship Beale, Norfolk, Va., rec. by Wm. B. Day and J. F. Rupert.

J. W. ENGLAND,
Secretary of the Council.

415 N. 33rd St., Philadelphia, Pa.

EDITORIAL NOTES

Editor: E. G. EBERLE, Bourse Building, Philadelphia, Pa.

Committee on Publication: J. W. ENGLAND, *Chairman;* G. M. BERINGER, E. FULLERTON COOK, H. B. MASON, F. J. WULLING, and the Editor-in-Chief of the Journal, General Secretary, Treasurer and Reporter on the Progress of Pharmacy, *ex-officio.*

Office of Publication, 253 Bourse Building, Philadelphia, Pa.

VARYING VALUATIONS ARE PLACED ON ASSOCIATIONS.

A photograph of an individual may appear to you as having a very striking resemblance to someone well known to you; show the picture to another person, quite as intimately acquainted with these individuals as you are, and he fails to see the close resemblance observed by you,—the point of contact is different.

So it is with the views and opinions relative to associations; the work is differently judged, the perspective and prospective do not take in the same objects, the value is not calculated by the same standard. The purpose of associations is to benefit many.

A. PH. A. BRANCHES.

We are pleased to learn from Dr. J. G. Diaz and Prof. J. P. Alacan that it is contemplated to form a Branch of the American Pharmaceutical Association in Havana.

There are now thirty-four members in Cuba, most of whom reside in Havana, and therefore there should be no great difficulty in the consummation, especially under the direction of such enthusiastic members.

The Association hopes the School of Pharmacy of the University of Havana will be represented and a large delegation present at the Atlantic City meeting. The ties that bind Pan-America are becoming closer in every activity.

The American Pharmaceutical Association welcomes the membership of all American pharmacists—the term applied in its broadest meaning. It is hoped that Canadian pharmacists will be represented, and only recently Prof. Alexander Benjamin Moore of Montreal indicated that he would be present. There are so many ways in which pharmacists throughout America can be helpful in establishing conditions that will not be upset by events in Europe.

The Committee on Organization of Local Branches is busy with plans for establishing other Branches and preparing suggestions for programs of the meetings.

The Montana Branch is now assured, evidencing again that where there is a will, a way to accomplish will be found. The Branches should become more potent factors, not only in doing pharmaceutical work, but in strengthening the Association through accession of membership.

AUSTRALASIAN PHARMACISTS' CORPS.

Seemingly difficulties are encountered in securing advanced pay and standing for pharmacists in government service of other countries than the United States.

The *Australasian Journal of Pharmacy* reports progress in the adoption of the following:

(1) Appointment of four Lieut.-Quartermasters (Pharmacists) at the Base Depots of medical stores.

(2) Appointment of a Senior Pharmacist with honorary rank of Captain in each State.

(3) Recognition of the Pharmacists' Corps Reserve, which hitherto had not been regarded with friendly eyes.

(4) Advancement in rank in the case of several pharmacists and consideration promised in reference to others.

(5) Abolition of the objectionable terms "Army Compounder" and "Army Dispenser."

LOUIS PASTEUR "FETE DAY."

On February 23, the savants of France gathered in the halls of the Sarbonne apotheosizing the pacific conquests of M. Louis Pasteur, who made humanity immune from one of the deadliest afflictions. Professor Charles Richet commemorated the event last year in verses glorifying the illustrious benefactor of humanity.

While the Institute of France had adopted resolutions to bestow prizes only to members who had fallen in battle or the wounded, the

poem gained their approval. The award amounted to two thousand dollars, which was at once given over by Doctor Richet to the families of the scientist soldiery fallen in battle, inhabiting the countryside of the Vosges where Pasteur was born.

So Pasteur still lives; also every clinic in the world teaches the therapeutic mysteries solved by him. The discoveries of French scientists, made in the laboratories of the republic, the system, the operations, are given with open hand to the whole world, the discoverer disdaining other rewards than the benevolence wrought and the appreciation of his colleagues in every land. From the days of Lavoisier and Cuvier to Pasteur and Berthelot, the assiduity and fastidiousness of scientists have preserved the intellectual from the sordid avarice which usually associate inventions with monopoly.

OHIO MANUFACTURER DONATES A $3,000,000 FARM TO WESTERN RESERVE UNIVERSITY.

The encouragement of schools and associations that have sustained pharmacy and are engaged in developing its science and art is not only desirable, but essential, for modern conditions. The income of schools engaged in teaching pharmacy will become more and more inadequate to meet the increasing expenses and the same may be said of associations earnestly striving for the betterment of pharmacy. This same condition obtains in other educational activities, for which, however, assistance seems to be more readily forthcoming than for those of pharmacy.

We congratulate Western Reserve University and realize the value of this donation; knowledge of agriculture is essential for prosperity in this country. May it awaken others to contribute, even if in a more moderate way, for other departments of this university. All branches of science are closely linked, and, however remote a relation, the promotion of one department helps the others.

FIXING THE RETAIL PRICE.

A correspondent of the New York Times is quite right when he asserts that when an individual has purchased an article and paid for it he has a right to do as he pleases with it, and contends further, that this may still be said without making it true nor making it right if done. To buy "an article" is one thing, but to buy a large quantity of a standard article and offer it for sale at less than the standard and fair price is quite another thing. The individual who seeks to beguile the public to his place of business by selling standard goods at less than his competitor and making an average profit from his customers by selling them unstandardized goods at exorbitant profits has not the right to do as he pleases with goods he has bought and paid for. On the contrary, the manufacturer has a natural right to protect his business against such practices, for his business is certainly injured as a consequence.

The Stevens-Ayre bill simply provides that a manufacturer may, if he so elects, standardize the selling prices of his products to prevent demoralization of his business. It does not provide for "organized protection" nor will it permit manufacturers to "get together" for the purpose of fixing prices.

The courts have held that contracts between manufacturers and dealers are not binding, and it is sought to legalize proper contracts by the passage of this important measure.

If "nobody questions the right of a manufacturer to put any price he chooses upon his wares," then nobody ought to oppose the passage of a bill which grants him this right and does no more.

BOOK NOTICES

New and Non-official Remedies, 1916, Containing Descriptions of the Articles Which Have Been Accepted by the Council on Pharmacy and Chemistry of the American Medical Association Prior to January 1, 1916. Chicago: American Medical Association, 535 North Dearborn Street.

As outlined in the preface to the book this volume contains a list of the medicinal substances which, having been examined by the Council on Pharmacy and Chemistry of the American Medical Association prior to January 1, 1916, and appearing to comply with the rules of the Council, were accepted for inclusion in New and Non-official Remedies. The acceptance of the articles included in the book was based in part on evidence supplied by the manufacturer or his agent, and in part on investigations made by or under the direction of the Council. Criticisms and corrections to aid in the annual revision of the matter are requested.

It is also emphasized that acceptance of an article does not necessarily mean recommendation, but simply that, so far as known, such accepted article complies with the rules adopted by the Council on Pharmacy and Chemistry.

The present edition includes a number of additions and changes. The omissions from the previous edition are, with few exceptions, recorded in the reprint of the Proceedings of the Council on Pharmacy and Chemistry with the reasons for this action. In connection with the several articles included in the present edition of N. N. R., considerable revision has been made in the descriptions of the physical and chemical properties and in the tests for identity and purity of the various substances described. The definitions of the substances or descriptions of the actions, uses and dosage have been modified in connection with a number of more or less widely used and important substances like alypin, salvarsan, pituitary liquid, radium and collargol. During the year 1916, descriptions of additional medicinal substances accepted by the Council will be published in the JOURNAL and will be issued in the form of supplements, which are sent to all who purchase the book.

M. I. W.

Annual Reprint of the Reports of the Council on Pharmacy and Chemistry of the American Medical Association For 1915 With the Comments That Have Appeared in the Journal. Chicago, 1916: Press of the American Medical Association, 535 North Dearborn Street.

The annual reprint of the reports of the Council on Pharmacy and Chemistry of the American Medical Association for 1916 constitutes an 8vo book of 185 pages. This book, in addition to the material as it appeared in the Journal, includes much of the more strictly scientific parts of the reports which from lack of space or because of the technical nature have been only abstracted or were entirely omitted from the reports as published.

The present volume contains detailed reports on a number of complex proprietary preparations, including a rather comprehensive study of lactopeptin and elixir of lactopeptin; also a report on proprietary digitalis preparations.

The detailed information regarding the examination of the several preparations reported on should be of interest to pharmacists generally, and a careful perusal of this reprint of the reports of the Council will prove to be not alone interesting but also stimulating.

M. I. W.

The Propaganda for Reform in Proprietary Medicines. Ninth Edition. Reprinted from the Journal of the American Medical Association.

The present volume of "The Propaganda for Reform" has been much elaborated and enlarged. It contains a total of 512 pages, or an increase of 137 pages over the edition immediately preceding it. The material generally is arranged in parts, headed: (1) Council Reports, (2) Laboratory Contributions, (3) Contributions from the Journal: Nostrums, and (4) Contributions from the Journal: Miscellany. In general, the rule previously established has been followed to confine the contents of "The Propaganda for Reform" to material that is of professional interest. Physicians and pharmacists who are desirous of obtaining in convenient form the matter dealing with "patent medicines" should consult the book "Nostrums and Quackery," a 700-page book published by the American Medical Association.

The ninth edition of "The Propaganda for Reform" contains a number of new articles, greatly increasing the size of the book. It also contains one novel feature which greatly enhances its value. The index includes references not only to articles in the book, but also to matter on proprietaries not accepted by the Council on Pharmacy and Chemistry which appeared in the Journal of the American Medical Association and elsewhere. This index makes of this edition of "The Propaganda for Reform" a very full work of reference on proprietaries which are undeserving of recognition. It should be understood, however, that not all articles indexed are condemned; some are merely discussed and compared.

M. I. W.

OBITUARY

MISS ALICE HENKEL.

Miss Alice Henkel, Assistant in Economic and Systematic Botany, Bureau of Plant Industry, Department of Agriculture, at Washington, died at her home in Chevy Chase, Maryland, March 8, 1916. Miss Henkel made a specialty of medical botany and has published several valuable bulletins. Farmers'

Bulletin No. 188, Weeds Used in Medicine; Bul. No. 51, part 6, Goldenseal. Bul. No. 89, Wild Medicinal Plants of the United States;

MISS ALICE HENKEL

Bul. 90, Peppermint; Bul. 107, American Root Drugs; Cir. 6, Cultivation and Handling of Goldenseal; Bul. 139, American Medicinal Barks; Bul. 219, American Leaves and Herbs; Bul. 26, American Medicinal Flowers, Fruits, and Seeds, written by Miss Henkel, have proven to be among the most popular issued by the Department. Miss Henkel's work is well known to thousands of druggists, students and professors of pharmacy, and the results of her many original investigations are considered authoritative in the sphere of applied economic botany. Miss Henkel has been a member of the American Pharmaceutical Association since 1902 and has been very active on the membership committee.

MARY AGNES STOUGHTON.

Mary Agnes, the daughter of John and Maria White, was born in Hartford, Conn., on October 18, 1866. She passed her early years and received her education in that city, and on April 8, 1891, married Dwight G. Stoughton, a druggist of Hartford and a prominent member of the Connecticut Pharmaceutical Association, of which he had been President in 1889.

Mr. Stoughton at this time owned and operated several drug stores, but, in the course of a few years having developed a heart difficulty which rendered his tenure of life uncertain, Mrs. Stoughton determined to study pharmacy, and entered one of her husband's stores for this purpose in 1896, in due time becoming a licensed pharmacist and so able to assist in the management and conduct of the business.

In 1904 she started a store of her own, and when Mr. Stoughton died in 1909, after disposing of one store, she conducted the others most successfully under the style of D. G. Stoughton Co., until her decease.

Mrs. Stoughton, who had attended the meetings of the Connecticut Pharmaceutical Association in her husband's company during his lifetime, joined the Association herself in 1903 and thereafter was a regular attendant at its meetings, where she became well known and highly respected by members of the trade throughout the State, and her business ability was recognized in her home city by her election as Secretary-Treasurer of the Hartford Retail Druggists' Association and as Chairman of the Drug Section of the Hartford Chamber of Commerce. She

MRS. DWIGHT G. STOUGHTON

joined the American Pharmaceutical Association in 1913.

Mrs. Stoughton's home life was beautiful

in the extreme, devoted to her husband and to her family, which she raised and educated in an exemplary manner, her sound convictions and broad charity commended her to the respectful esteem of a wide circle. In business she conducted the affairs of D. G. Stoughton Co. with great ability; she was one of the few noted women of the country who have successfully engaged in the retail drug business and was the only woman member of the Connecticut Pharmaceutical Association.

When attending the last meeting of the State Association, Mrs. Stoughton appeared to be in robust health and had apparently many years of usefulness before her, but in the midst of her activities and with but few premonitory symptoms, she died of apoplexy on January 22, 1916.

Mrs. Stoughton is survived by her mother, brother and two children, a daughter, Amanda Louise Stoughton, and a son, Dwight H. Stoughton, who, after studying pharmacy in one of his mother's stores and becoming a licentiate in pharmacy, is now studying medicine at McGill University, Montreal, Canada.

Mrs. Stoughton belonged to the Roman Catholic Communion and was a member of the Church of Our Lady of Sorrows, Hartford, where the funeral services were conducted and a solemn mass of requiem celebrated. The clerks from her stores were the bearers at the funeral, which was attended by many friends and the society of the "Ladies of Charity" to which she had belonged. Numerous representatives of the State and of the Hartford Retail Druggists' Associations also attended the services to honor the memory of their late highly-esteemed associate and friend.

Interment was in the family plot at Cedar Hill Cemetery. T. F. M.

CHARLES HENRY McCONNELL.

Charles H. McConnell, president of the Economical Drug Company, Chicago, Ill., and formerly chief of staff of the Grand Army of the Republic, died on March 17 at his home, 4417 Ellis Avenue, Chicago. Funeral services were held on the evening of March 19 in Boydston's Chapel, under the auspices of George H. Thomas Post, No. 5, G. A. R. In accordance with Mr. McConnell's wish the body was cremated.

Mr. McConnell was born in Dublin, Ireland, October 12, 1841, and at an early age came to the United States with his brother. He was educated in Detroit, where he was afterward employed by the Detroit Tribune, but when the Civil War began he enlisted in the Twenty-fourth Michigan Infantry. At the close of the war he established a printing company in Chicago and built up a fortune, but in the early 80's lost his money in theatrical ventures. He went to Brooklyn, N. Y., as a real estate clerk, and while there conceived the idea of a cut-rate drug store. Returning to Chicago he started the first cut-rate drug business, in 1892, in Clark Street. His store failed during the panic of 1893, when Mr. McConnell took over the stock and moved it to State Street as the Economical Drug Company, and in four years he liquidated all indebtedness.

Mr. McConnell joined the American Pharmaceutical Association in 1899. His widow and one daughter, Mrs. Cora E. Wright of Chicago, survive him.

MRS. WM. B. DAY.

Bertha Pettit Quinn was born in Ohio, January 27, 1872. Her parents were Wm. B. Quinn and Mary E. Quinn. The family moved to Pittsburgh soon afterward, and in 1889 moved to Chicago, where they have since resided.

Miss Quinn was educated in the common schools at Pittsburgh and the South Division High School, Chicago. She was married to Wm. B. Day, June 10, 1895. Two children were born to them, Helen and Charlotte, who are now nineteen and seventeen years of age, respectively.

Mrs. Day was a great lover of home life but enjoyed meeting with friends at the annual conventions of the Illinois Pharmaceutical Association and the American Pharmaceutical Association. She had attended most of the Illinois Pharmaceutical Association conventions, beginning with 1898, and had been a regular attendant at the American Pharmaceutical Association Meetings, beginning with the Boston meeting of 1911. She was elected Treasurer of the Women's Section at San Francisco, 1916.

Mrs. Day had been sick for eight months and passed away on the morning of Friday, March 24. The funeral services, which were private, were held on Sunday, March 26. Interment was in Mt. Hope Cemetery, Chicago.

The Association sympathizes with General Secretary Day and family in their loss.

RESOLUTIONS OF WOMEN'S SECTION A. PH. A.

WHEREAS, It has pleased our Heavenly Father to call to her long last Home, the immortal spirit of Mrs. Bertha P. Day; and

WHEREAS, In answer to that call the home of Professor William Baker Day has surrendered to His loving care a much cherished and a most devoted wife and a loving mother and the world has been deprived of an unusually beautiful character; and

WHEREAS, Mrs. Day was a loved and valued member of the Women's Section and Professor Day has long been associated with the American Pharmaceutical Association and has ever been deeply interested in all pharmaceutical affairs; therefore be it

Resolved, That the Women's Section of the American Pharmaceutical Association expresses deepest sympathy for Professor Day and daughters; and be it further

Resolved, That these resolutions be spread upon the records of the Women's Section and that a copy be presented to the family.

Resolutions adopted by the Massachusetts College of Pharmacy at the regular quarterly meeting, held on March 6, 1916.

The Massachusetts College of Pharmacy has lost one of its oldest and best beloved members in the death of Samuel A. D. Sheppard, who passed away at Newton Centre on November 28, 1915.

Mr. Sheppard was a man of sterling character, excellent judgment and wise counsel, and he possessed the professional spirit of pharmacy to an exceptional degree. His influence was great, and it was always exerted for the attainment of the right.

This College hereby records its appreciation of Mr. Sheppard's great services, and its sense of loss of a true and devoted friend, whose achievements will remain as a lasting monument to his memory.

(Signed) JOHN G. GODDING, Chairman.

HENRY A. ESTABROOK,

IRVING P. GAMMON.

SOCIETIES AND COLLEGES

ANNUAL MEETINGS.

The 64th Annual Meeting of the American Pharmaceutical Association will be held at Atlantic City, N. J., from September 5 to 9, 1916. The first Council session will be held on Monday, September 4 (Labor Day), at 7.30 P.M., and the first general session on Tuesday, September 5, at 11 A.M., and the final general session on Friday, September 8, at 2 P.M.

The Headquarters of the Association will be at the Hotel Chalfonte.

A full, detailed program will be published later.

The American Conference of Pharmaceutical Faculties and the National Association of Boards of Pharmacy have decided to meet in Philadelphia on Thursday, August 31, Friday, September 1, and Saturday, September 2.

The meetings of the Board will be held on Thursday and Friday, and those of the Faculties on Friday, while on Saturday there will be a joint session of the Board and Faculties. Additional sessions may be held during the evenings or on Monday, if necessary. The A. C. P. F. will meet in the rooms of the Philadelphia Drug Exchange, and the N. A. B. P. in the rooms of the Philadelphia Board of Trade or other rooms of the Philadelphia Bourse Building. After adjournment, the members of these bodies will go to Atlantic City to attend the sessions of the American Pharmaceutical Association the following week.

AMERICAN CHEMICAL SOCIETY: DIVISION OF PHARMACEUTICAL CHEMISTRY.

The Spring Meeting of the American Chemical Society will be held at the University of Illinois, Urbana, Illinois, April 18 to 21, 1916. The Division of Pharmaceutical Chemistry will hold three meetings, on the 19th and 20th.

The secretary received an encouraging response to his letter of last November, and is expecting a good program. A number of members have offered papers on the Chemistry of the U.S.P. IX. If a sufficient number of papers on this subject are received we will devote an entire session to them.

G. D. BEAL, Secretary.

N. W. D. A. CONVENTION.

The N. W. D. A. Committee on Arrangements and Entertainment, which has been indefatigable in its efforts to make the 1916 convention an exceptionally enjoyable one, announces that, besides the entertainments which it has planned for the evenings of Monday, Tuesday, Wednesday and Thursday, October 2, 3, 4 and 5, including the president's reception, which will be followed by a ball and supper in the Belvedere Hotel, on the evening of the first day, the banquet in that hotel, on Thursday evening, October 5; two informal events at the Emerson Hotel, one for Tuesday evening, October 3, and the other for Wednesday evening, October 4; there are also to be afternoon entertainments for the first four days of the convention, concluding with a boat-ride down the Patapsco River and Chesapeake Bay to Annapolis and return, on the afternoon of Friday, October 6.

In view of the heavy demands for accommodations which are already being made upon the two convention hotels, the Belvedere and Emerson, all those planning to attend the meeting are again requested to aid the committee and avoid disappointment by communicating immediately with W. A. Sailer, care of Sharp & Dohme, relative to reservations, stating the kind of room or rooms they desire and whether they expect to arrive Sunday afternoon, October 1, or Monday morning, October 2.

UNIVERSITY OF WASHINGTON COLLEGE OF PHARMACY.

The committee in charge of the plans for the permanent improvement of the University Campus has recognized the need of the Garden of Medicinal Plants of the College of Pharmacy by assigning to its use a tract of four acres. This is very conveniently located, extending for some distance on both sides of the boulevard in the south part of the campus. It includes soil of several different types. It has also been promised that as soon as Lake Washington is lowered by the opening of the Government Canal, thereby extending the area of the Campus, there is to become available for the Drug Garden a tract of low, black soil on the lake shore.

The lectures on Commercial Pharmacy by Cornelius Osseward are being very much enjoyed by the sophomore class. Mr. Osseward has devoted special attention to familiarizing the class with the provisions of the Federal Anti-Narcotic Law.

On March 1 a party of forty students under the direction of Prof. A. W. Linton made the first of a series of observation trips. The first visit was to the City Hospital, where Mr. B. A. Brown, who is the hospital pharmacist and an alumnus of the College, served as the guide through the various departments, including the splendidly equipped X-ray laboratory. At the branch house of the H. K. Mulford and Co., the party heard a very fine lecture on biologics by Mr. Friend. The lecture was accompanied by moving pictures illustrating the various processes in the manufacture of serums and vaccines as carried out in the laboratories at Glenolden, Pa. A visit was then paid to the Seattle branch of Parke Davis and Co., where every opportunity was given to inspect the large stock carried at this point to serve the needs of the Northwest.

The following graduates of the College of Pharmacy are at present enrolled in colleges of medicine: Ben. F. Eager at Northwestern, R. R. Hannon at Johns Hopkins, Milton Veldee at Harvard, Wm. Ludwig at the University of Michigan, Dennis Sivart and Ralph Lieser at the College of Medicine of the University of Oregon.

Mr. Milton H. Veldee, Ph.C.'11, B.S.'13, was recently granted a scholarship in the College of Medicine at Harvard University. Since leaving the University of Washington, Mr. Veldee has been employed in the Federal Laboratories as bacteriologist at Cincinnati, Ohio, and Louisville, Ky.

PHILADELPHIA COLLEGE OF PHARMACY.

On Thursday, February 16, the Senior Class of the Philadelphia College of Pharmacy, together with several members of the Faculty and a number of invited guests, including Editor Eberle of the JOURNAL, were the guests of the firm of Whitall Tatum Co., on an all day excursion to the firm's Millville, N. J., plant.

The party, numbering about 150, left Philadelphia, *via* the Market Street ferries at 9 A.M. Upon their arrival at Millville they were divided into two parties, and each party was subdivided into smaller groups or squads of about 20 each, in order to facilitate the inspection. The various squads were conducted by experienced guides through every department of the works. The enumeration

of the departments will give some idea of the educational value of the trip, also of the completeness of the establishment:

1. Clay grinding and kneading and pottery plant for making the pots and furnaces used in melting the glass.

2. Foundry and machine shop where the moulds and name plates are made.

3. Mixing department where the various ingredients are assembled and mixed for making green, amber, flint and opal glass and the special glass for chemical ware.

4. The blowing of green glassware, including bottles of all sizes, and carboys.

5. The blowing of flint glassware, including bottles and also graduates, chemical ware and glass tubing.

6. The homœopathic vial and special apparatus department, where syringes, nasal douches, etc., are made.

7. The stopper grinding department.

8. The calibrating department, where expert operators, mostly girls, calibrate and adjust hydrometers, graduates, burettes, etc.

9. The special grinding department, where numerals are placed on calibrated ware and where patterns are ground on fancy show bottles.

10. The packing departments.

11. The display rooms where samples of every article made by the firm were on exhibition.

There was an intermission at 12.30 and the party was escorted to the local gymnasium and entertainment hall, where the ladies of the Millville Presbyterian Church had prepared a bountiful and appetizing luncheon.

The party returned to Philadelphia about 5.30 P.M. and unanimously agreed that it had been one of the most pleasant as well as one of the most profitable days ever spent.

ELECTION OF OFFICERS, PHILADELPHIA COLLEGE OF PHARMACY.

The following officers of the Philadelphia College of Pharmacy were elected at the annual meeting, March 27: President, Howard B. French; first vice-president, Dr. Richard V. Mattison; second vice-president, Joseph L. Lemberger; treasurer, Warren H. Poley; corresponding secretary, Dr. Adolph W. Miller; recording secretary, Dr. C. A. Weidemann; curator, Joseph W. England; editor, Henry Kraemer; librarian, Katharine E. Nagle; trustees to serve for three years, Samuel P. Sadtler, William L. Cliffe and H. K. Mulford. After many years of service R. M. Shoemaker declined re-election as treasurer, but agreed to act as a trustee to fill the unexpired term of Warren H. Poley, who was chosen treasurer.

U. OF P. MEDICAL SCHOOL TO LIMIT CLASS TO 100.

Beginning with next year the Medical School of the University of Pennsylvania will limit all first-year classes to a hundred students. This step was decided upon at the last meeting of the Board of Trustees. It marks the first time in the history of any American medical college that a permanent limitation has been placed on the number of students to be enrolled.

Dean Pepper defines the step as an attempt not only to raise the standard of the University Medical School, but also to permit more thorough instruction.

When the regulation goes into effect next year it will cut down the size of the Freshman class more than half. All applicants for admission to the Medical School will be compelled to hand in their names by July 1, and to sign a pledge agreeing to enter the school the following September. A waiting list will be maintained.

COLLEGE OF PHARMACY, STATE UNIVERSITY OF IOWA, IOWA CITY, IOWA.

The Johnson County Druggists' Association at a recent meeting elected E. R. Utterback, '12, president. Johnson County has thirty-five druggists; twenty-one in the retail business, three in manufacturing industries, six teachers, the other five connected in some way with pharmaceutical work. Considering the fact that the most of the towns are small, this is a good representation.

The pharmacists of Johnson County have plans well under way for the meeting in Iowa City of the State Pharmaceutical Association, June 20, 21, 22. Iowa has one of the largest State Associations in the country and a large attendance is expected this year, since this is the first meeting in the University city. It is the intention of the local people to have a program of such a nature that the visitors may take many valuable ideas home with them as well as the feeling that they were royally entertained. Professor R. A. Kuever is local secretary.

The Mortar and Pestle Society met on the evening of March 22. Professor Kuever,

Professor Cooper and Dr. Chase furnished the program, after which the members enjoyed a social hour, and a spread given by Professors Cooper, Kuever and Doden.

Beginning with the next school year students in the College will be required to take military drill, first year students taking the regular drill required of liberal arts students, but second year students having the first semester only, and that in hospital corps work, on the belief that a pharmacist called to active service would naturally be detailed there.

BULLETIN NO. 3, PUBLICITY COMMITTEE OF THE PENNSYLVANIA PHARMACEUTICAL ASSOCIATION.

In Bulletin No. 1, sent out by the Publicity Committee of the Pennsylvania Pharmaceutical Association early in January, the enormous rise in price of a small number of drugs was given in tabulated form. Some of these showed increases as high as 2000 percent. Experts now say that if the war continues for another year the present high prices will look like bargain counter rates, for many drugs and chemicals will be absolutely unobtainable by that time and their places will have to be filled by others possessing identical or similar properties. Many chemical and textile industries are almost crippled by the high prices and scarcity of materials.

There are some interesting underlying reasons for this state of affairs. All of the vegetable and animal oils have risen enormously because of the fact that glycerin can be made from them and the glycerin then converted into the explosive nitroglycerin or dynamite. This is true especially of cod-liver oil, which is being taken by Germany from Norwegian sources of supply. Castor oil comes from a seed principally grown in India, and Great Britain, who controls the trade, has placed an embargo upon the oil, it is said, because it is one of the few oils suitable for lubricating aeroplanes.

The compounds of mercury, among which are calomel, corrosive sublimate, gray powder, blue mass, blue ointment, etc., are scarce because mercury is used in making the compounds known as fulminates, indispensable for the caps used for exploding cartridges and shells.

The potash salts are high and scarce because the world's largest available supply of easily worked material containing this valuable alkali is in Germany.

Coal-tar dyestuffs are rapidly becoming unobtainable on account of the strict blockade which England has enforced since March, 1915, against their importation from Germany.

All vegetable drugs of Italian, Turkish, Serbian and Bulgarian origin have joined the list of skyscrapers during the past few months, for obvious reasons.

Quinine still maintains its abnormally high price on account of the high figures obtained at the recent auction sale of cinchona bark, from which quinine is made, held at Amsterdam, the world's centre for this drug.

Glycerin is enormously high also on account of its use in the manufacture of nitroglycerin.

Paris green and other insecticides are high in price on account of the scarcity of the crude products from which they are made. Licorice root and stick licorice have risen to unheard of figures and are still going up, as the Spanish and Italian sources of supply are exhausted and the Russian supply is not available because of the closing of the Dardanelles.

What is needed more than anything else at the present time and what the members of the Pennsylvania Pharmaceutical Association will work for at the coming meeting at Reading, is a proper and intelligent revision of the patent laws and the tariff so as to make it possible for our infant chemical industries to gain a foothold without competition from abroad when the war ends. We have the brains and the capital in this country, but no financial interests are going to put money into a project which is unjustly treated by patent laws and tariff regulations, as is almost everything pertaining to the manufacture of medicines or chemicals.

PITTSBURGH COLLEGE OF PHARMACY.

Monday, March 26, marked the silver anniversary of Dr. Julius A. Koch as dean of the Pittsburgh College of Pharmacy. In commemoration, the members of the faculty and the Board of Directors tendered a testimonial dinner in his honor, on the evening of March 27, at the Pittsburgh Athletic Club. The dinner was attended by every member of the faculty and nearly all of the directors.

The gathering was honored by the presence of Dr. John A. Brashear, a former dean of

the University. Dr. J. H. Beal, Emeritus Professor of Pharmacy, was unable to come, but sent a letter expressing his regrets and extending congratulations.

Doctor Koenig, as the oldest representative of the faculty, and who had been a co-worker with Dean Koch in the early days of his career, on behalf of the faculty, presented to the honor guest a beautiful gold plated, steel miniature contusion mortar and pestle, on which was inscribed:

1891 1916
Presented to
Julius Arnold Koch
by his Colleagues
In commemoration of his
25th Anniversary
as Dean of the
Pittsburgh College of Pharmacy

Short addresses followed by Chancellor Samuel B. McCormick, Louis Emanuel, President of the College; John C. Wallace, Chairman of the Board of Directors; B. E. Pritchard, Secretary of the Board. Dean Koch, who had been kept in the dark as to the significance of the occasion, was then called on and responded in a brief but feeling expression of his appreciation of the eulogies that had been pronounced upon his efforts to make the Pittsburgh College of Pharmacy an educational institution to be proud of. After this, brief remarks were made by George W. Kutscher, T. F. Aschman, and Peter G. Walter; Professor Louis Saalbach acted as toastmaster. Those present were: Chancellor Samuel B. McCormick, Julius A. Koch, F. T. Aschman, Frederick A. Rhoades, Albert F. Judd, Louis Saalbach, Leasure K. Darbaker, Frederick J. Blumenschein, John H. Wurdack, Herman S. Kessler, Karl S. Burkett, Louis Emanuel, John C. Wallace, B. E. Pritchard, E. A. Schaefer, William G. Schirmer, John R. Thompson, Carl Saalbach, H. L. Lohmeyer, George W. Kutscher, Peter G. Walter, Morris Einstein, W. E. Rodemeyer, R. W. Henderson, Adolph Koenig.

As a matter of interest we mention that the handsome miniature mortar and pestle, presented to the Dean, was the handiwork of Doctor Blumenschein, who turned it out of a solid piece of steel by means of a lathe.

PERSONAL AND NEWS ITEMS

DR. A. B. LYONS.

On April 1, Dr. A. B. Lyons celebrated his seventy-fifth birthday at his home in Detroit.

The Detroit Branch of the American Pharmaceutical Association honored the occasion with a flowering azalea and a letter of tribute. President Alpers, Secretary Day, Treasurer Whelpley, Editor Eberle, Prof. J. M. Good and others of the American Pharmaceutical Association each sent congratulatory letters. Professor Remington sent a large bunch of roses and a letter of appreciation, and the Congregational Church, of which Doctor Lyons is a life deacon, also sent a large bunch of roses. Other friends sent flowers or other gifts, so that his house was thoroughly decorated.

Doctor Lyons's health did not permit of a special dinner, or any celebration of a taxing nature, so the expressions of regard had to be made in a quiet manner.

Doctor Lyons is a man whom to know more intimately is to honor and esteem the more. Both his scientific attainments and his personal character command the more respect as one learns to know him better.

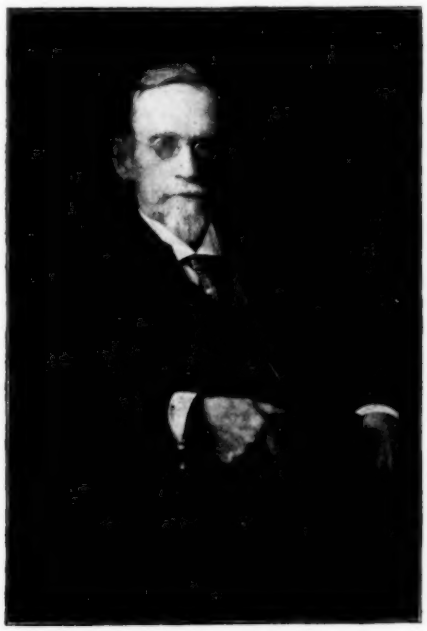
LETTERS OF APPRECIATION.

A congratulatory letter by Dr. William C. Alpers, President of the American Pharmaceutical Association, expressing his appreciation and that of the Association for the valuable and unselfish services of Dr. A. B. Lyons:

"As President of the American Pharmaceutical Association, I am happy to send you our heartfelt congratulations on the seventy-fifth anniversary of your birth. But few of our members are privileged to live long enough to see this remarkable day—a day of rejoicing and happiness to all those that reach it. I am sure that I express the thought of every one of our members in saying that it is our sincere wish to be with you to-day, to look into your eye, to shake your fraternal hand, and to rejoice with you at this rare distinction that Providence has bestowed upon you; and this desire is the more intense and sincere as the American Pharmaceutical Association greets you as one of its best and most loyal members.

"The records of our proceedings show the true and unselfish labor that you have per-

formed for the advancement and betterment of our profession. In untiring devotion and energy you have contributed to our literature, helped in the solution of our most difficult problems, and always stood in the foremost ranks of the searchers and fighters for truth and justice. In quiet modesty—the attribute of true greatness—you have performed your duty, and your devotion was known only to those who had the privilege



DR. ALBERT B. LYONS
Honorary President, American Pharmaceutical Association, 1913-1914

of coming in closer contact with you and of casting a glance into your heart.

"Accept, then, to-day, not only my personal congratulations, but those of every member of the American Pharmaceutical Association, for whom I speak. Your services will be recognized as long as Pharmacy continues to be a profession, and your example can be put before the young as a model of true devotion and earnest endeavor. Though the weight of years may rest on your shoulders, your mind has remained active and your heart true and young, in the consciousness of a blissful and serviceable life devoted to the welfare of others, always remaining true to the ideals that have guided your steps throughout your long and beautiful career.

"Extending to you again, on this happy day, my sincere and hearty congratulations, I am

"Yours in fraternal friendship,
(Signed) "W. C. ALPERS."

An appreciation and toast on the occasion of the celebration of Dr. Lyons's seventy-fifth birthday, April 1, 1916:

"To Doctor Albert Brown Lyons, pharmacist, chemist, botanist, scientist, philosopher, but above all, a Man, who has reached a ripe age but who will never be old; who for half a century has devoted his life to uplifting service for his fellows; whose labors have contributed to promoting the health of man, to the conservation of his vital energies, and to his morale. In his devotion to science no research has been too exacting or minute, and no labor too painstaking or intricate to quench his determination to live up to his highest ideals.

"May God spare him for many more years, and may each day bring to him happiness and renewed strength.

"We cannot honor this noble, self-sacrificing man too much; may I be permitted to join my spirit with yours in this celebration, for this is the fervent wish of his friend.

(Signed) "JOSEPH P. REMINGTON."

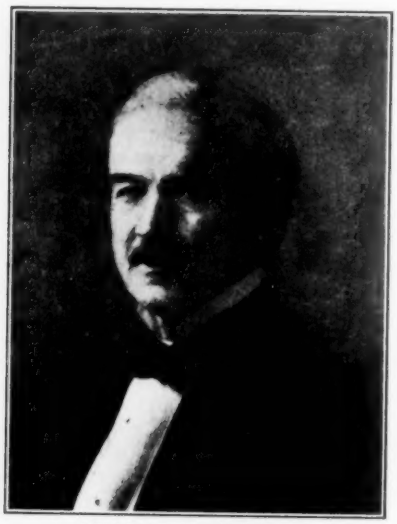
CHICAGO VETERAN DRUGGISTS' ASSOCIATION CELEBRATES BIRTHDAY OF THOMAS N. JAMIESON.

The initial meeting of the Chicago Veteran Druggists' Association was held June 21, 1898, when there were present Albert Elbert, E. O. Gale, W. Jauncey, H. Biroth, C. Plantz, J. C. Borcherdt, J. S. Jacobus, Isaac Fry, F. Schroter, H. H. Green, Wilhelm Bodemann, P. H. Patterson, W. Scupham, W. K. Forsyth, J. Blocki, W. Grassly, Th. Behrens, P. Behrens, W. Dyche, F. N. Schmidt and T. N. Jamieson. Of this number, the first ten have passed away. The others frequently mingle at the festive board.

Such was the quarterly meeting held on February 24, preceded by the customary Round Table luncheon, at which time the birthdays of Richard Voge and T. N. Jamieson were celebrated; the latter, however, in a preliminary way only.

At this time also, Recording Secretary Bodemann was presented with a handsome black leather portfolio. The presidential office is given to various members at the

election of the membership. The office of honorary president, occupied by O. F. Fuller, that of corresponding secretary, held by John Blocki, and that of recording secretary, by Wilhelm Bodemann, are permanent offices.



THOMAS N. JAMIESON

Thomas N. Jamieson was born February 29, 1848. Hence his birthdays come less frequently than do those of the majority of the members. The last celebration was held on February 29 at the Germania Club and constituted quite an elaborate function, arranged for by Messrs. Bodemann, Blocki and Otto. The first order at the table was a silent toast to the departed friends.

After having done justice to the banquet, President Scherer introduced the toastmaster, Otto Hottinger, who called on Secretary Bodemann to respond to a toast to Mr. Jamieson, who expounded on the true friendship and many virtues of this honored member, now sojourning in California and therefore not present at the meeting held in his honor.

Among the guests of the evening were, Judge Pettit, H. D. Crooks, Carl von Herman and F. H. Kellet.

Judge Pettit spoke at length, and brief remarks were made by Messrs. Englehardt, Potts, Forsyth, Grassly, Craig, Schmid and Carr.

Mr. O. F. Fuller was unable to be present on this occasion.

The evening was a most enjoyable one and again presents the possibilities for other cities following in the footsteps of Chicago in organizing associations of this kind.

We are indebted for a most interesting report of this meeting to Mr. T. Schmid.

THE PHARMACIST AND THE LAW

PRICE MAINTENANCE REFERENDUM.

The United States Chamber of Commerce, on the urgent request of those who are interested in legislation to prevent price cutting, has submitted the question for a referendum vote of the branches of the organization throughout the country, as to whether legislation as to fixing resale prices and the general maintenance of prices is desired by the business interests of the country represented in the United States Chamber and its branches.

This question of legislation on resale prices represented in various bills before the Committee on Interstate Commerce of the House has received practically no consideration during the present session, and intimations are given by members of the committee that the committee is so much engaged with other matters that the subject has not been permitted to come up. It is presumed that on any results of a referendum vote will depend whether the effort will be made to press this legislation in the House at this session.

DRUGLESS THERAPY.

The Pennsylvania Bureau of Medical Education and Licensure has adopted the term "Drugless Therapy" under which to license certain practitioners of medicine. The Bureau has defined Drugless Therapy specially to include:

1. Any treatment having the spine for a base, including (*a*) Chiropractic; (*b*) Napravit; (*c*) Spondylotherapy; (*d*) Chiropractic-Spondylotherapy; (*e*) Neuropathy; (*f*) any other treatment having the spine for a base not here specified.

2. Any treatment having the mind for a base: (*a*) Suggestive Therapeutics; (*b*) Metaphysics; (*c*) Vitatherapy; (*d*) Magnetic Healing; (*e*) any other treatment having the mind for a base not here specified.

3. Any system, method, science, or art of treatment based on 1 and 2 which is in existence or may come into existence and not already specified under the above named divisions.

Admission to Drugless Therapy practice in

Pennsylvania is granted by the issuance of a license to a candidate who passes the licensing examination and satisfies all the other legal requirements.

The Bureau has defined Massage and Allied Branches especially to include:

1. Any treatment having any manual, physical, mechanical exercise, apparatus, appliances or treatments for a base, including (*a*) massage; (*b*) medical gymnastics; (*c*) Swedish movements; (*d*) mechanotherapy; (*e*) vibro-massage; (*f*) any other manual, physical, mechanical method of exercises, apparatus, appliances or treatments not here specified.

2. Any treatment having water, air, heat, cold, light, sun, earth for a base, including (*a*) hydrotherapy; (*b*) heliotherapy; (*c*) thermotherapy; (*d*) any other treatment not here specified but having water, air, heat, cold, light, sun, earth for a base.

3. Any treatment having electricity for a base, including (*a*) electrotherapy; (*b*) electromassage; (*c*) electric-light baths; (*d*) any other treatment having electricity for a base.

Admission to the practice of massage and allied branches in Pennsylvania is granted by the issuance of a license to the candidate who passes the licensing examination and satisfies all other legal requirements.

BILL TO REGULATE BIOLOGICAL PREPARATIONS.

A bill has been introduced in the House by Representative Steele, of Iowa (H. R. 13278), to authorize the Secretary of Agriculture to license establishments for and to regulate the preparations of viruses, serums, toxins and analogous products for use in the treatment of domestic animals. This measure makes it unlawful to ship in interstate commerce worthless products of the kinds enumerated, and in addition to providing establishments for the preparation of these products provision is made in the bill for proper marking of the products when offered for sale. Penalties are provided for violation of the law. The measure has been referred to the Committee on Agriculture of the House.

NEW NARCOTIC LAW ORDER FORM.

The officials of the United States Internal Revenue Bureau, charged with the duty of enforcing the narcotic law, have prepared and submitted to representatives of the various trades a sample of a new order form greatly simplifying the first draft of order form provided when the law was enacted. Under the new form, if it shall be finally approved as satisfactory to physicians, druggists and the government, duplicate copies of orders required by law will be made with carbon paper on a tinted sheet in order to comply with the law as to exact duplicates of the orders for narcotic drugs under the terms of the act. The opinion of the officials is that this will make technical violations of the law less frequent and facilitate the handling of these narcotic drugs.

TREASURY DECISION 2309.

T. D. 2309 supplements, T. D. 2213, and exempts physicians' prescriptions for identical compounds exempted under section 6 of the Harrison law. The decision follows:

Section 6 of the act of Congress, approved December 17, 1914, does not apply to extemporaneous prescriptions unless written for a preparation or remedy as hereinafter defined. The exemptions in that section apply exclusively to ready-made preparations and remedies prepared in accordance with the United States Pharmacopœia, National Formulary or other recognized or established formula, usually carried in stock by dealer and sold without a prescription, provided such preparations and remedies are sold, distributed, given away, dispensed or possessed strictly in good faith for medicinal purposes only, and not for the purpose of evading the intentions or provisions of the act. The selling, dispensing or possession of any such preparation or remedy containing opium, or any alkaloid, salt or derivative thereof, for the purpose of satisfying or of ministering to a drug habit is not selling or dispensing for medicinal purposes within the intentions of the law.

Preparations and remedies within the intent of section 6 are hereby defined to be ready-made compound mixtures prepared in accordance with a recognized or established formula as indicated above, which contain not more than one of the enumerated drugs in a quantity not greater than that specified, together with other active medicinal drugs in sufficient proportion to confer upon such preparations or remedies valuable medicinal qualities other than possessed by the narcotic drugs if dispensed alone. Simple dilutions of a narcotic drug made by admixture with inert or nearly inert substances, as sugar of milk, or simple solutions of narcotic drugs in water, syrup, diluted alcohol, flavoring mat-

ter, etc., are not *bona fide* medicinal preparations within the meaning of the exemption.

The several alkaloids, salts or derivatives of opium, if aggregated in the same mixture, are not exempt. A preparation which contains the permitted maximum quantity of any one of the alkaloids, salts or derivatives, if fortified by the addition of any one of the other named alkaloids, or of its salts or derivatives, is not a preparation or remedy of the character contemplated by the exemption of section 6.

Preparations or remedies which come within the exemptions of section 6, as herein defined, may be sold with or without a prescription, which prescription may be refilled, if sold wholly in good faith for medicinal purposes only.

The refilling of a narcotic prescription for an exempted preparation or remedy, as herein defined, combined with other non-narcotic medicinal agents, with a consequent further dilution of the mixture, will be permitted.

The foregoing decision is made by Commissioner Osborn, of the United States internal revenue office, with the approval of W. P. Malburn, acting Secretary, is issued as of date of March 11, and is intended as stated to be "an interpretation of section 6 of the act of December 17, 1914, supplementary to T. D. 2213."

THE AMERICAN DYE INDUSTRY.

The dyestuff situation, as outlined by Dr. Charles H. Herty, professor of chemistry of the University of North Carolina, and president of the American Chemical Society, is such that it will be possible for the United States to manufacture her own dyestuffs. He declares that owing to the experimental stage of this industry in this country it is necessary that a protective tariff be instituted by Congress in order that the industry may be freed from foreign competition.

Dr. Herty has stated that an astounding situation presents itself to-day to the American nation. "Industries, the annual output of which is valued at billions of dollars, with laborers numbering millions of American citizens, find themselves directly faced with a most serious crisis due to the cessation of shipments of dyestuffs from Germany. To meet this situation American manufacturers and capitalists have stood ready to proceed with all possible haste to the development of a national self-sustained dyestuff industry. They ask only that Congress insure against unjust foreign competition, which they rightly realize cannot be met on even terms for several years, and which they have every reason to believe will be ruthless in its character, in its efforts to regain lost markets."

WAR DEPARTMENT

List of changes of station covering period ending March 31, 1916, in the cases of Sergeants First Class and Sergeants Hospital Corps, U. S. Army.

SERGEANTS FIRST CLASS.

Thomas E. Brower, from Ft. Oglethorpe, Ga., to Southern Department.

Algernon Van Aller, from Philippine Department, to Ft. Wood, N. Y.

Pinkney L. Ogle, from Hawaiian Department, to U. S. on furlough.

Samuel A. Weir, from Ft. Robinson, Neb., to Southern Department.

Robert G. Kennedy, from Ft. Riley, Kan., to Southern Department.

Clifford H. Perry, from Ft. Crockett, Tex., to Southern Department.

Richard A. Wood, from Frankford Arsenal, Penn., to Depot Q. M., Philadelphia.

John Keralla, from Ft. Wood, N. Y., to Frankford Arsenal, Penn.

Nealey Prater, from Pres. of Monterey, Cal., to Southern Department.

Welcome N. Powell, from Letterman Gen. Hosp., to Southern Department.

SERGEANTS.

Frank Cassidy, from Presidio of S. F. Cal., to Ambulance Company No. 2.

Lemuel J. Rogers, from Ft. Myer, Va., to Canal Zone.

William S. Washburn, from Madison Bks., N. Y., to Canal Zone.

Fred H. McClure, from Columbus Bks., O., to Canal Zone.

John J. Pempey, from Walter Reed General Hospital, to Canal Zone.

Arthur Bade, from Ft. McKinley, Me., to Ft. H. G. Wright, N. Y.

Alvin W. Owen, from Ft. Clark, Tex., to Ft. Sam Houston, Tex.

Harry Birch, from Vancouver Bks., Wash., to Hawaiian Department.

George W. McWorter, from Pres. of Monterey, Cal., to Hawaiian Department.

Harry B. Hoyt, from Hawaiian Department, to U. S., on furlough.

David W. Diven, from Philippine Department, to Letterman General Hospital.

David Perkins, from Ft. H. G. Wright, N. Y., to Ft. Michie, N. Y.

To Southern Department:

Joseph F. Landrock, from Alcatraz Island, Cal.

Roland E. Preston, from Alcatraz Island, Cal.

John C. Mullenix, from Columbus Bks., O.

Willard M. Barton, from Columbus Bks., O.

Allen Hull, from Army and Navy General Hospital.

Joseph W. Gregory from Ft. Hamilton, N. Y.

Dominic J. Sabini, from Ft. Hancock, N. Y.

Alexander Hepburn, from Ft. Jay, N. Y.

Foster Sharp, from Ft. Williams, Me.

Robert E. L. Rogers, from Ft. Moultrie, S. C.

Thomas Munden, from Ft. Monroe, Va.

Philip Bedore, from Ft. Leavenworth, Kan.

Wheeler W. Johnson, from Ft. Oglethorpe, Ga.

John C. Schweiger, from Ft. Oglethorpe, Ga.

John S. Eberly, from Ft. Greble, R. I.

Walter G. Allen, from Ft. Adams, R. I.

Sebald J. Fichtner, from A. G. H., Ft. Bayard, N. M.

Claude Richards, from Ft. Riley, Kan.

Edwin F. Taylor, from Ft. Wayne, Mich.

Rex M. Davenport, from Ft. Barrancas, Fla.

Thomas P. Brittain, from Ft. Crockett, Tex.

Harold Both, from Letterman General Hospital.

Henry W. Augsburg, from Letterman General Hospital.

James F. Griffin, from Letterman General Hospital.

Fitz W. Donoho, from Ft. Winfield Scott, Cal.

John L. Morgan, from Pres. of S. F. Cal.

George T. O'Sullivan, from Ft. Baker, Cal.

Riley F. Nix, from Ft. Meade, S. D.

George Gagan, from Vancouver Bks., Wash.

Vollie C. Freeman, from Jackson Bks., La.

Fay S. Elzey, from Ft. Worden, Wash.

William Bowman, from Ft. Myer, Va.

Charles Hill, from Pres. of Monterey, Cal.

Daniel W. Mayse, from San Diego, Cal.

Albert C. Calish, from Ft. Casey, Wash.

August H. Waitz, from Ft. Flagler, Wash.

Louis Davidson, from Ft. D. A. Russell, Wyo.

Edward Richards, from Ft. D. A. Russell, Wyo.

Richard Queen, from Ft. Sheridan, Ill.

Charles F. Manggang, from Letterman General Hospital.

Russell W. Northup, from Letterman General Hospital.

Logan M. Gilbert, from Letterman General Hospital.

David W. Diven, from Letterman General Hospital.

CHANGES OF ADDRESS

WARREN, L. E.
From 2100 Seminary Ave., Chicago, Ill.
To 4525 N. Robey Ave., Chicago, Ill.

MUELHAUSE, O. W.
From 1250 E. Fort Ave., Baltimore, Md.
To 5120 Latrobe Park Terrace, Baltimore, Md.

KRAMER, JULIUS.
From care of Y. M. C. A., Jackson, Mich.
To 195 Exchange St., Rochester, N. Y.

CARTAYA, J. H.
From 20 Jesus Maria St., Havana, Cuba.
To 125 Campanario St., Havana, Cuba.

FONTEYNE, G. J.
From 72 Adams St., New Bedford, Mass.
To 1075 County St., New Bedford, Mass.

ELLIOT, CHAS. S.
From Texas City, Texas.
To Ft. Dupont, Del.

ALPERS, OTTO.
From 399 Bergen St., Brooklyn, N. Y.
To 580 Atlantic Ave., Brooklyn, N. Y.

WILKERSON, J. A.
From 2036 Russell Ave., St. Louis, Mo.
To care of Missouri Athletic Assoc., Fourth and Washington Sts., St. Louis, Mo.

LANGEHAN, H. A.
From Chemistry Bldg., Univ. of Wis., Madison, Wis.
To 1821 West Lawn Ave., Madison, Wis.

DU MEZ, A. G.
From La Cledes, Ill.
To 612 Howard Place, Madison, Wis.

JOURNAL ANNOUNCEMENTS

Subscriptions: Annual subscriptions in advance, including postage: United States and Mexico, $4.00; Canada, $4.35; foreign countries, $4.50. Single copies, 35 cents. Remittances should be made payable to Treasurer H. M. Whelpley, but mailed to Journal of the American Pharmaceutical Association, 253 Bourse Building, Philadelphia, Pa. Under the rules of the Post Office the Journal can be regularly mailed only to bona-fide paid subscribers.

Requests for Back and Missing Numbers: Requests for back and missing numbers should be sent to the Editor. Claims will not be allowed if sufficient notice has not been given of change of address, and in no case if received later than sixty days from date of issue. Notice of change of address should give old and new address.

Contributions: The Journal accepts no responsibility for the opinion of its contributors. Contributions should be sent to the Editor; use only one side of the sheet for writing, and double-space the lines. Articles are accepted for publication on condition that they are contributed solely to this Journal; and "all papers presented to the Association and its Branches shall become the property of the Association, with the understanding that they are not to be published in any other publications than those of the Association, except by consent of the Committee on Publication." (By-Laws, Chapter X, Article 11.)

Reprints: Authors may obtain reprints of the J. B. Lippincott Company, Philadelphia, Pa., at the prices attached to the proof sent them, provided the order is received before the type has been distributed. The prices are also given on this page.

Advertisements: Communications relating to advertising should be sent to the Editor. Forms close on the first of each month, and copy should be in by the fifteenth of the month preceding date of issue, to receive proof. Date of issue—the fifteenth of the month. Advertising rates sent on request.

Membership: Applications for membership in the American Pharmaceutical Association may be made of any of the officials. The annual payment of five dollars covers the annual dues and subscription to the Journal. Members receive, also, the publications of the Association that are distributed free of charge.

Further information will gladly be furnished by any of the officers of the Association and members.

An Application Blank will be found on page xix of this issue.

Cost of Reprints: Reprints will be furnished at the following prices:

	No cover	With cover
100 copies, 4 pages ..	$2.50	$4.50
200 copies, 4 pages ..	3.00	5.50
50 copies, 8 pages ..	2.75	4.50
100 copies, 8 pages ..	3.50	5.00
200 copies, 8 pages ..	4.50	6.50
50 copies, 12 pages ..	3.75	4.75
100 copies, 12 pages ..	4.75	5.75
200 copies, 12 pages ..	5.75	6.75
100 copies, 16 pages ..	6.75	7.75
200 copies, 16 pages ..	7.50	8.50

Orders may be sent to J. B. Lippincott Company or Journal of the American Pharmaceutical Association, 253 Bourse Building, Philadelphia, Pa.